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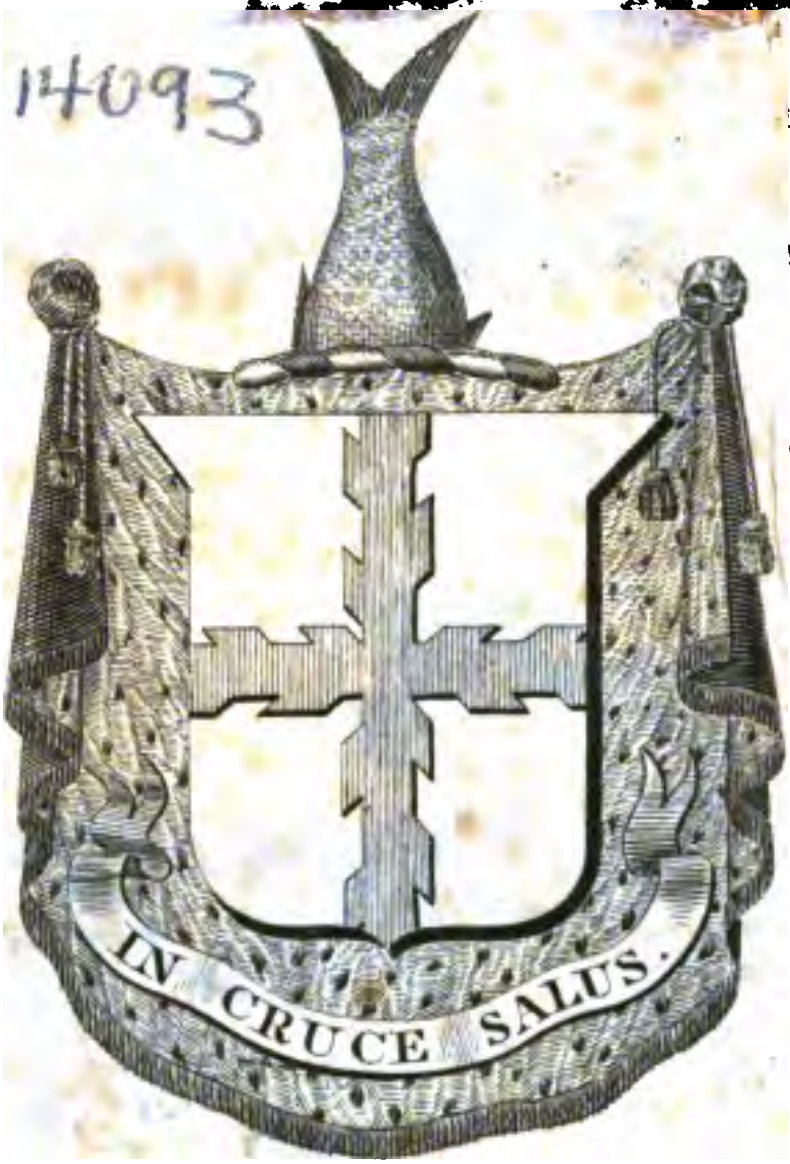

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Augᵗ 19— Many a sweet Floweret falls before the blossoms expand &c.

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on
THE WORKS OF GOD
and
of His Providence,
BY
C. C. Sturm.

Part 1st.
Vol. I.

LONDON

Printed for J. Walker, Paternoster Row, and J. Harris,
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1809

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REFLECTIONS

ON

THE WORKS OF GOD;

and of

His Providence

THROUGHOUT ALL NATURE.

Translated by a Lady,

FROM THE GERMAN OF C. C. STURM.

VOL. I.

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REFLECTIONS, &c.

JANUARY I.

Meditations on New-Year's Day.

I REPRESENT to myself this first day of the year, as if it were the first day of my life; and I presume to hope, from the goodness of God, blessings for this year, equal to those that have been granted me from my birth till now. What may I not hope from my heavenly Father, who, from the first moment of my existence (what do I say?) even before I was born, provided for me with so much tenderness and goodness? In my parents he gave me friends, who, from my very birth, supported and brought me up, and whose disinterested affection protected me in that weak and helpless state. Without such care, how could I have been preserved to enjoy the many blessings I now possess.

If I had, at that time, been capable of reflection, I might undoubtedly have promised myself many agreeable hours, in the course of my existence on earth. Now, that I am capable of it, I will give myself up entirely to a sense of my happiness, and the future hopes I am permitted to indulge. I enter with the present day, into a new period of life, not so much unprovided for, nor so helpless as when I first came into the world, but with equal occasion for assistance in many respects. I require friends to shed sweets upon my life, to sup-

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port my spirits, when oppressed with grief, and to warn me of dangers that I might otherwise fall into. And surely, my heavenly Father will grant me this best of blessings. Whatever may happen to me during the course of the year, he has undoubtedly chosen for me a friend, who will be my adviser in difficulties, and my consoler in misfortunes; who will share the sweets of prosperity with me, and, in moments of weakness, will aid and support my reason. God had laid the foundation of my future lot from the first moment of my life. It is not by chance that I am born of such parents, in such a part of the world, in such a time, and not in another. The time, the place, the circumstances, and the consequences of my birth, had all been planned by God in the wisest manner. It was then that he fixed my fate, that he weighed the evils I was to endure, that he saw the pleasures and comforts which were to restore calm and serenity to my mind. By his decree many causes, then unknown, were to combine for my happiness, and every thing relating to me was to contribute towards fulfilling his beneficent views. With this first day of the year, my lot is, as it were, settled over again. The Lord, who gave me being, takes in at one glance (which nothing can deceive) each week, each day, each instant of this year. All, indeed, that relates to me is hidden from me; but all things are visible to God, and all are settled according to his decrees, which are full of wisdom and goodness. If, in the course of the year, I experience any misfortune, which I could not foresee; if any unforeseen happiness falls to my lot; if I have any loss to bear which I could not expect; all will happen according to the will of God. Full of this conviction, I begin the new year. Let what will happen, I shall be more and more confirmed in the persuasion, that God will be my preserver in my old age, as he was in my youth. If I find myself exposed to poverty and

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distress, I will remember the days of my infancy, that still more critical state, in which he protected me. If I meet with ingratitude from a friend, even *that* ought not to make me unhappy. God can raise me up other friends, in whose tenderness I may enjoy delight and comfort. If my life is full of dangers and persecution, which seem beyond all human foresight, even this ought not to terrify me. I should put my trust in God, who protected my childhood, when it was exposed to a thousand dangers. What then can prevent my beginning this year with a tranquil mind? I look forward without anxiety, and leave my fate to the guidance of Providence.

JAN. II.

The Blessings granted to us by God in winter, and to which we pay too little attention.

IF we were to examine the works of God more attentively than we generally do, we should find, at this season, many reasons to rejoice in his goodness, and to praise the wonders of his wisdom. Few, without doubt, are so insensible as not to feel emotions of pleasure and gratitude, when beauteous nature displays the rich blessings of God, in spring, summer, or autumn. But even hearts the fullest of sensibility are rarely excited to the sensation of warm gratitude, when they see the trees stripped of their fruit, and the fields without verdure; when the bleak wind whistles round their dwelling; when a chilling cold comes to freeze the earth and its inhabitants. But, is it certain that this season is so deprived of the blessings of Heaven, and of what is sufficient to kindle gratitude and piety in the heart of man? No, certainly. Let us only accustom ourselves to be more attentive to the works of God, more touched with the many proofs of his goodness towards us, and

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we shall find opportunities enough, even in winter, to praise our Benefactor. Consider how unhappy we should be, if, during violent cold, we had neither wood for fire, nor clothes to keep us warm. With what goodness the Lord prevents our wants, and furnishes us (even in the season the most void of resources) with the necessaries and conveniencies of life. When, at this moment, we may be enjoying the comfortable warmth of a fire, shall we not return thanks to the Lord, who gives us fuel, with such profusion, that the very poorest can be supplied with it?

If it was given to mortals to know the chain of every thing in nature, how great would be our admiration at the wisdom and goodness of its Author! But, however incapable we are of forming to ourselves an idea of the whole of his works, the little we understand of it gives us sufficient reason to acknowledge, that the government of God is infinitely wise and beneficent. Winter belongs to the plan he has formed. If this season did not exist, the spring and summer would not have so many charms for us, the fertility of our lands would much diminish, commerce would be at an end in many provinces, and part of the woods and forests would have been created for no purpose. Considered in this light, winter is certainly very useful, and supposing even that its advantages were not so apparent, it would be sufficient for us to reflect that winter is the work of the Creator, as well as spring and summer, and that all which comes from God must be for the best.

JAN. III.

Daily Proofs which God gives us of his Providence.

NOT to acknowledge the hand of Providence, but in extraordinary cases, is to betray our ignorance and our weakness. In the ordinary course

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of nature, things offer daily, which ought to excite our attention, and our admiration. The formation of a child in the womb of its mother, is as great a miracle of the power and wisdom of God, as the creation of the first man, formed out of the dust. Likewise the preservation of our life, if we reflect on the several causes and effects which combine for that purpose, is no less wonderful than the resurrection of the dead. The only difference between them is, that one happens but seldom, while we every day witness the other. This is the reason it does not strike us more sensibly, or raise our admiration, as it would otherwise do. Undoubtedly my own experience ought to convince me fully, that a divine Providence watches over the preservation of my days. I am not certain of a single moment of my life; a thousand unknown and latent causes may hasten the end of it, chill my blood, or stop my breath. Alas! I feel but too well how incapable I am of preserving my life, or of removing such and such infirmity, such and such danger, with which I am threatened. Subject to so many bodily evils, to so many wants, both mental and bodily, I am thoroughly convinced that, were it not for the tender mercies of God, I should be a very wretched creature. The union of my body and soul, their reciprocal and continual acting on each other, are inconceivable, and neither depend on my will or power. The beating of my pulse, the circulation of fluids within me, goes on without interruption, and without my being able to contribute to it in the smallest degree. Every thing convinces me, that my faculties, my state, the duration of my existence, does not depend on my will: it is God, who, by a secret and absolute power, maintains in me, strength, motion, and existence. If my breath is not yet stopped; if my blood still circulates; if my limbs have not yet lost their activity; if the organs of my senses have preser-

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ved their play; if, in this instant, I have the faculty of thinking, and the use of my reason; it is to God alone that I am indebted for it. But, why do I reflect so seldom, and with so little gratitude, on the daily ways of Providence? Ought not the reflections which now offer themselves, to have always been imprinted on my heart? Ought I not, at least, every morning and evening of my life, to meditate on the benefits of my Creator; admire and bless him for them? How just that I should do so? and that, by this homage, I should distinguish myself from the insensible brute, from those creatures who have not received the faculty of contemplating the works of God.

Divine Preserver of my life! teach me to contemplate worthily the miracles of thy goodness. Make my mind capable of that rapture which the soul of David experienced each time that he reflected on thy works: and, when thou grantest me a favour, however small it may be, may I feel the value of it, may it lead me to glorify thee, to acknowledge that thou art the only source of the happiness of man. Then I may apply to myself these words of a holy patriarch: "I am nothing in comparison of all the goodness and mercy with which thou hast acted towards thy servant."

JAN. IV.

Several Uses of Fire.

FIRE is, in some degree, the universal instrument of all the arts, and all the necessaries of life. In order that man should make continual use of this element, the Creator has caused it to mix in the air, the water, and all fat and oily substances.

How very useful is all the combustible matter which supplies us with fuel. Without a sufficient

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provision of it, we should not only lose the greatest advantages, but we should be exposed to the greatest inconvenience.

In winter, were it not for the fire which lights us, a great part of our time would pass in the most insupportable darkness. Deprived of that artificial light, our most agreeable amusements would cease at sun-set. We should be obliged to remain motionless, or else to wander in darkness with horror, in the midst of a thousand dangers. How melancholy our state would be, if, in these long evenings, we could neither enjoy the pleasures of society, nor make use of the resources of reading, writing, and working! Consider how unwholesome, and how little nourishment there would be in the greatest part of the food which the earth produces, if, by means of fire, they were not dissolved, softened, and prepared to a certain degree.

And how should we be able to provide so many other necessaries and conveniences of life, if the workmen and artists did not procure them for us with the help of fire? Without that element, we should not be able to melt metals, to make them malleable, to refine them; to change sand into glass, or to give to lime the consistence of stone.

Without fire, nature and all its treasures would become useless, and would lose in our eyes the most of their charms. But let us limit ourselves to the advantages which we gather from it at this moment. What comfort do we find in a room warmed by it, so as to guard us from the impression of the outward air? During hard frosts we should be condemned to do nothing, at least to a thousand disagreeable sensations, if the fire, by warming us, did not convey to us a certain activity. How many old and sickly people would suffer doubly, were it not for the benign influence of fire? What would become of the weak infant, if its delicate limbs were not strengthened by a

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gentle heat? O! unhappy people, who suffer all the rigour of this cold season, ready to sacrifice a portion of the bread which is left you, in order to get fuel to warm your trembling limbs. It is you that I pity from the bottom of my heart. Your situation reminds me of a part of my happiness to which I have hitherto given but little attention; and imposes on me more strongly the obligation of blessing my heavenly Father for the advantages I draw from the heat of fire. It imposes on me also the duty of giving part of my abundance, to relieve others from those evils, which I am myself exempt from. O my God, my Creator and Benefactor, deign to look upon me! See my heart expand in praises and thanksgivings. It is to thy fatherly care that I owe all the advantages, all the pleasures which fire enables me to enjoy.

JAN. V.

Winter Amusements.

DURING this season, which many, through prejudice, consider as not being cheerful, every one, according to his taste, seeks amusements to divert himself, and make the long winter evenings pass away less tediously. Several think of nothing but making up for the severity of the cold, by seeking dissipation in noisy company and vain pleasures. It is sad to see the efforts so many people make, to shorten, by idleness or trifling pursuits, days which are already too short. The space of a day is generally filled up by a train of employments which are unworthy the dignity of man, and the purposes of his soul. Some hours after sun-rise, the luxurious man quits his bed. During breakfast-time, he forms projects for the amusements to which he means to sacrifice this

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new day. Then, abandoning himself to idleness, he waits the hour for a second repast: It comes, and he gives himself up without bounds to the pleasures of the table. Satisfied, or rather surfeited, with the immoderate use he made of it, he throws himself on a couch, in order to recover sufficient powers to bear new excesses. The hour comes in which he is to go to a tumultuous company, unless the noisy circle is to assemble round him. He sits down to play. For the first time since sun-rise, he shews then that he has a soul; and, with cards in his hands, the hours appear to him to pass rapidly. At last, this animal of a man goes from play to the table, and from the table to bed; but he does not find sweet sleep there. Restlessness or frightful dreams disturb his nights. However, of all the ways of lavishing the days, and the long winter evenings, these are not the most reprehensible. How ingenious is man in multiplying ways to shorten his time with trifling amusements! Sometimes it is hunting which induces him to quit the town; then he pursues the timid hare, or the fearful deer, who, at the last gasp, sinking through weakness, becomes the prey of the hunter, whose inhuman pleasures disturb the repose of the country, and of nature. Sometimes luxury leads him to the ball, where he often loses, with his innocence, his peace of mind, and his health. Sometimes it is the pleasures of public places which enchant him. There, passions glide imperceptibly into the heart, or strengthen themselves in it: passions which make him incapable of tasting real pleasures. Sometimes he runs to other entertainments, to other diversions, which too often also draw sins in their train.

Perhaps I have pointed out enough of winter. Give me leave now to remind my fellow-cretures of their duty in regard to these amusements. I do not blame the love of society, which is particularly necessary at this season; but let not this

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inclination degenerate into a strong passion. Let it not take possession of your whole soul. Suppose, even in your society, there should pass nothing contrary to virtue and good morals, it may, notwithstanding, be hurtful to you, if it takes up too much of your time; if it makes you neglect your duties; or, if your domestic affairs are deranged by it. Pleasures are not our daily work: it is for relaxation only that our Creator permits them. Too strong an inclination for them, instead of answering the purpose they were designed for, is seeking enjoyments, which may, in the end, prove sources of regret and remorse. I particularly advise you to be very attentive to the choice of your social pleasures. Do not waste your time in amusements, which you cannot enjoy without endangering your virtue, your reputation, or the welfare of your family. Never let those mad pleasures,—which may wound your neighbour, give rise to complaints, or cause tears to flow, which may make you neglect the duties of society and religion—ever find access into your heart. Do not let even the most innocent pleasures so far take possession of you, as to make you insensible to the pure and solid pleasures of Christianity, or take away your taste for serious occupations.——O God! govern thou thyself my heart, and grant that I may never forget thee in the enjoyment of earthly pleasures. May the remembrance of thy presence guard me against temptations in the midst of the world! May I ever be more attached to the exercise of my duties as a Christian, as a citizen, a father, &c. than to seeking those pleasures which so easily divert me from my duties, or, at least, lessen my love of goodness! Why should I be so earnest about trifling amusements, while, even in these winter days, I find purer pleasures within my reach: if I find a taste for the contemplation of the works of God in nature, the stormy sky, the fields covered with

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snow, and a thousand other phenomena of winter, will serve at once to amuse my mind, and to increase my devotion. For, in winter also, the works of the Lord are great: and he who will reflect upon them, will enjoy a continual variety of pleasures.

JAN. VI.

The Care which Providence takes of Animals during the Winter Season.

MILLIONS of rational beings, dispersed in the different countries of the world, are provided at this season with all the necessaries of life. The greater the number of them is, the greater variety of wants they have, according to their condition, their age, their manner of living. The less we are able to form a plan, and take secure measures for our own preservation, the more the arrangements, so full of wisdom and goodness, made by our Creator, to provide for it, deserve our attention and admiration. But there would be a sort of selfishness in confining the divine goodness and wisdom to the preservation of mankind alone, without remembering the care that Providence also takes of animals during winter. A care which he extends to creatures much greater in number on the earth, than the rational beings who inhabit it.

However wonderful the preservation of human creatures may be, we can say, with truth, that the cares of Providence towards animals are still more astonishing proofs of the wisdom, power, and goodness of God.

That the prodigious number of animals which our globe contains, should find food or habitation in summer, is not surprising, because all nature then is disposed to concur towards that end. But

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that, in this season, the same number of creatures, those millions of quadrupeds, of reptiles, of birds, of fishes, and insects, should continue to exist, is a circumstance which must excite the astonishment of every one capable of reflection. Nature has provided most animals with a covering, by means of which they can bear the cold, and procure themselves food in winter, as well as in summer. The bodies of wild beasts which inhabit forests and deserts, are so formed, that the hair falls off in summer, and grows again in winter, till it becomes a fur which enables the animal to endure the most severe cold. Other kinds of animals find an asylum under the bark of trees, in old crevices, in hollows of rocks and caves, when the cold obliges them to quit their summer dwelling.

It is there, that some carry before-hand the food which is to serve them, and thus live on what they have gathered in the summer; others pass the winter in profound sleep. Nature has given to several sorts of birds an instinct, which prompts them to change place at the approach of winter. They are seen flying in great numbers into warmer climates. Several animals, who are not designed to travel, find, notwithstanding, their wants supplied in this season. Birds know how to find out insects in moss, and in the crevices of the bark of trees. Several kinds of quadrupeds carry provision in the summer-time into caves, and feed on it in winter. Others are obliged to seek their subsistence under the snow and ice. Several sorts of insects in winter, confined to marshes, and frozen rivers, are deprived of food for that time, and still preserve life. Perhaps, also, many means, made use of by Providence for the preservation of animals, are yet concealed from us.

Adore, with me, our almighty and gracious Preserver, whose goodness and majesty does not

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make him disdain attention to the weakest creature existing under the heavens.

From the elephant to the mite, all animals owe to him their dwelling, their food, and their life; and, even where nature herself seems barren of resources, he finds means to make amends for her poverty.

Let this consideration strengthen our confidence in God. How can anxiety, care, or anguish, get access into our hearts, or make us despair of being preserved during the winter? That God, who provides for the animals, will not forsake mankind. He who shews himself so great in smaller objects, will be still greater in the more important.

The God, who provides a covering for animals, will be able to clothe us. The God, who points out to them a retreat in the caves of the mountains, will find for us an asylum to pass our days in quietness. The God, who has prepared for them, even under the snow and ice, their proper food, will be able to provide for us in the most critical seasons.

In fine, let these reflections lead us to imitate, as much as our faculties will permit, the generous care of divine Providence, in contributing to the preservation and happiness of our fellow-creatures, and even to the welfare of every living animal. To be cruel towards animals, to refuse them food, and indispensible conveniencies, is to act manifestly contrary to the will of our common Creator, whose beneficent cares extend even to those beings which are inferior to us. And, if animals have a real right to our attention, how much more are we obliged to soften, as well as we can, the evils of our fellow-creatures? Let it not be sufficient for us to supply our own wants, but let us endeavour to supply those of others; and never suffer any one to sink under misery, whom it is in our power to relieve.

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JAN. VII.

The Pleasures of Winter.

EACH season has its peculiar pleasures and beauties. Winter itself, void as it appears to many, of charms or pleasures, answers the Creator's end in that respect. For the sake of those who, through ignorance or prejudice, murmur against this season, I will display the pleasure it affords, both to our senses and to our hearts. Is it not an agreeable sight to behold the morning dawn shining on a country covered with snow? The thick fog, which, like a veil over the earth, concealed every object from us, vanishes all at once. A light frost whitens the tops of the trees. The little hills and valleys are tinged with the bright reflection of the sun, whose happy influence gives new life to every creature. It seems to invite the linnet to quit the groves, and the sparrow to perch from branch to branch.

In proportion as nature seemed dead in the absence of the sun, so much the more lively she appears, when animated by it; and she delights the eyes of the traveller with her white clothing. Have you ever happened to remark the form of the snow? Have you reflected on the wonders which a single flake of this substance contains!—Admire, on one hand, the regularity, the symmetry of its form, and, on the other, the infinite number of the same flakes which fall from the air.—What an agreeable sight, to see the hill, the forest, and the groves, clothed with a dazzling splendour! What a charm results from the assemblage of all these objects! Behold! (for the eye can scarce have enough of this sight, however accustomed to it), behold the brilliant dress of those hedges! behold the forests bending un-

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der the white sheet which covers them! The whole offers to our view the appearance of a vast desert, over which one uniform veil of a dazzling whiteness extends itself. What idea shall I form of those, who, at the sight of these phenomena, feel nothing; or, who do not conceive the pleasing sensations that the Creator meant to convey to them? They who do nothing at this moment but murmur against the laws of nature, how much are they to be pitied! If the prospect of nature in winter gives them no pleasure, I fear they will be equally insensible, even to the spring, with all its charms. How is it possible not to feel how gracious the Lord is! How adorable his wisdom, and how unbounded his mercy, in all that relates to winter! Nature, however barren it appears to us, is, notwithstanding, a divine master-piece; and it is our blindness only which conceals its beauty from us. In every part of nature there shines some ray of the divine wisdom, and still more in what is concealed from us. We do not trace her through all her ways, and we are only attentive to what strikes our senses, and flatters our inclination: and, in this respect, many are like the brutes, who see the sun, the snow, and the other phenomena of nature, without looking up to the Lord, as the source from whence all things proceed in heaven and on earth.

With what satisfaction will every ones mind be filled, who accustoms himself to contemplate, with attention, the works of God, at this season of the year. The air may be troubled, the sky become stormy, and nature spoiled of its charms; but they will enjoy true pleasures in discovering throughout all things, traces of the wisdom, power, and goodness, of our great Creator. However limited their natural faculties may be, they will always find subjects enough to employ their minds. They will have no occasion to seek with

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eagerness the dissipations of the world, the amusements of dancing and play. They will find, either in retirement, or in the midst of their friends and children, pleasures ever real, and ever varied.

O my soul! apply thyself to the enjoyment of these pleasures. Let the works of God often employ thy thoughts, and these reflections will soften the sorrows of life. Raise thyself to God by that chain of beings he has created, and let him be at all times and seasons the object of thy praise.

JAN. VIII.

Vegetables which preserve their Verdure in Winter.

THE earth may now be compared to a mother who has been robbed of those children from whom she had the best hopes. She is desolate and deprived of the charms which varied and embellished her surface. However, she is not robbed of all her children. Here and there some vegetables are still to be seen, which seem to defy the severity of the winter. Here the wild hawthorn shews its purple berries; and the laurestina displays its blossoms in clusters, crowned with leaves which never fade. The yew-tree rises like a pyramid, and its leaves preserve their verdure. The weak ivy still creeps along the walls, and clings immoveable, while the tempest roars around it. The laurel extends its green branches, and has lost none of its summer ornaments. The humble box shews, here and there, in the midst of the snow, its evergreen branches. These trees, and some others besides, preserve their verdure in the coldest climates, and in the severest seasons. They are emblems of the durable advantages which *he* possesses, whose mind is cultivated, and whose temper is

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sweet and serene. The splendour of dress, which only dazzles the eyes of the vulgar, is a trifling and transient splendour. The most brilliant complexion will fade, and all outward beauty is of short duration; but virtue has charms which survive every thing. The man who fears the Lord, is "like a tree planted by the side of a rivulet. It grows and flourishes, and its branches extend far off. It bears fruit in due season, and its leaves fade not. It refreshes him who seeks its shelter, and the traveller blesses it."

What a delightful image is this of a pious man! He borrows not his value from the exterior and arbitrary goods of fortune. His true ornaments are in himself. The storms of adversity may sometimes shake him, but they cannot overpower him; and he soon rises again above the stormy regions. If he is reduced by misfortune to poverty, he is still rich in possession of the favour of God, a good conscience, and the hope of a blessed immortality.

This meditation leads me to the idea of a benevolent old man. In the winter of his life, he resembles the plants which preserve their verdure, even in that season of life. How many storms of fortune has he supported with constancy! How many attracting objects has he seen wither! He yet exists, while most of those of his time have disappeared. A mild cheerfulness is seen in him, the happy remains of his spring. However wrinkled his forehead may be, whatever ravages the hand of time has imprinted upon his body, he is still adorned with virtues which make amends for the loss of exterior charms. He grows young again in his children; and his wisdom, his integrity, his great experience, serve still for examples and lessons to all around him.

Oh! may the winter of my life resemble this. May I, after having lost all those charms of youth, and of a riper age, which I have boasted of, truly blossom again in my old age, like a fertile tree,

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and inspire, by my virtues, veneration and love! Shortly will the beauty of my body fade, like a summer flower. Happy, then, if I have no reason to regret the loss of it. Happy, if I find myself adorned with those attractions which have their source from wisdom and virtue, and which will not wither, even in the grave!

JAN. IX.

The singular state of Man when asleep.

IN order to know the omnipotence and wisdom of God, we need not have recourse to extraordinary events. The most common things, the daily changes which happen in nature, and in our own bodies, are alone sufficient to convince us, in the strongest manner, that it is a Being, infinite in wisdom, goodness, and power, who has created the world, and who directs every event in it. Of the great number of wonders of which he is author, I will now mention one only; and though it happens daily, it does not the less deserve to be remarked, and to become the object of our admiration. How often have those been refreshed and recruited by sleep, who possibly have never reflected on that state; or, at least, have never considered it as one of the remarkable effects of divine goodness! They think that nothing extraordinary happens when balmy sleep comes upon them. They think the machine, their body, is formed for that situation, and that their inclination to sleep proceeds from causes purely natural.

But perhaps sleep may be considered in two different lights. On one side, there is nothing in it which may not result necessarily from our nature. On the other, there is in this natural effect something so striking and wonderful, that

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it is well worth a closer examination. In the first instance, it is a proof of the wisdom of our Creator, that we go to sleep imperceptibly. Let us try only to watch the moment in which we are falling asleep, and that very attention will prevent it. We shall not go to sleep till that idea is lost. Sleep comes uncalled. It is the only change in our manner of existence, in which reflection has no share; and the more we endeavour to promote it, the less we succeed. Thus, God has directed sleep, that it should become an agreeable necessity to man; and he has made it independent of our will and reason. Let us pursue this meditation, and reflect on the wonderful state we are in during our sleep. We live without knowing it, without feeling it. The beating of the heart, the circulation of the blood, the digestion, the separation of the juices; in a word, all the animal functions, continue and operate in the same manner. The activity of the soul appears for a time in some degree suspended, and gradually loses all sensation, all distinct idea. The senses deaden, and interrupt their usual operations. The muscles, by degrees, move more slowly, till all voluntary motion has ceased. First, this change begins by the forehead; then the muscles of the eye-lids, the neck, the arms, and the feet, lose their activity, to such a degree, that a man seems to be metamorphosed into the state of a plant. The situation of the brain becomes such, that it cannot transmit to the soul the same notions as when awake. The soul sees no object, though the optic nerve is not altered; and it would see nothing, even if the eyes were not shut. The ears are open, and yet they do not hear. In a word, the state of a person asleep is wonderful in all respects. Perhaps, there is but one other in the world so remarkable, and this is visibly the image of that state which death reduces us to. Sleep and death are so nearly

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alike, it is right to observe it. Who, in reality, can think of sleep, without recollecting death also? As imperceptibly as we now fall into the arms of sleep, shall we one day fall into those of death. It is true, that death often gives warning of its approach several hours or days before: but the real moment in which death seizes us happens suddenly; and when we shall seem to feel the first blow, it will already be our last. The senses, which lose their functions in our sleep, are equally incapable of acting at the approach of death. In the same manner, the ideas are confused, and we forget the objects which surround us. Perhaps, also, the moment of death may be as agreeable as the moment of falling asleep. The convulsions of dying people are as little disagreeable a sensation to them, as the snoring is to those that sleep.

Let our devotion often bring this meditation to our minds. Every time we seek repose in bed, let us reflect on all the wonders of balmy sleep, and bless our Preserver, who, even while we sleep, does such great things for us. Great things, indeed, for, if he did not guard us with a protecting hand, to how many dangers should we not be exposed in the night! If God did not keep and direct the beating of our hearts, the circulation of our blood, and the motions of our muscles, the first sleep after we were born would have delivered us into the arms of death.

Let us reflect attentively on all these things, and our own hearts will point out to us the duties we ought to fulfil towards so great a benefactor. Then, with joy and gratitude, we shall bless the Lord, who shows himself to be our God in every circumstance through life.

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JAN. X.

The Advantages of the Climate we inhabit.

LET us sensibly feel how happy we are in all respects. For the blessings of our heavenly Father are poured upon us on every side. The prospect of our forests, our meadows, our hills; the pure and temperate air which surrounds us; the day, the night, the seasons of the year, and the variations which attend them; all prove to us the goodness of God, and the greatness of our felicity. Can we then still be discontented with the lot which is fallen to us, and complain of the economy with which God distributes his blessings; murmuring that we have not a perpetual summer, that the rays of the sun do not constantly shine upon us, and that an equal degree of warmth is not always felt under one zone? What ingratitude! and at the same time, what ignorance! Indeed, we know not what we wish, nor of what we complain. Is it through carelessness or pride, that we disown the goodness of God, who has been particularly favourable to our countries? We murmur often at the severity of winter. We are mad enough to envy the inhabitants of places where this change of seasons is unknown: But it is precisely the winter which makes the climate we live in one of the most healthy in the world. In hot countries, they are more exposed to epidemic disorders than where the sun reflects less heat; and the people are not so long lived as in our climate. Besides, it is observed that men are less robust, and population not so great, as among us. And when the cold is at the highest possible degree with us, we are still much happier than the inhabitants of those countries where the cold is so much greater, and lasts so much

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longer, that our severest winters would appear to them to have the mildness of autumn. Let us compare, in imagination, our lot with that of the inhabitants of the northern part of our globe. Here, some rays of the sun come to brighten our cloudy days, and revive our spirits. There, neither days nor nights are ever enlivened by the light of that beneficent globe. Here, by means of warm fires, or in bed, we are perfectly secured from the severity of the cold. There, on the contrary, disturbed, attacked by fierce beasts, men dread them more than the cold; and their poor cottages cannot defend them from those different kinds of enemies. With us, the pleasures of society soften the inconveniences of winter: But the unhappy mortals near the north pole, are almost shut out from the rest of the earth, and live dispersed in clans. We are so happy as to see the succession of day and night, while those unfortunate creatures pass most of their lives in darkness. In fine (and this is the most essential advantage,) after four or five stormy disagreeable months, we enter into a season, the charms of which make us amends for all we have suffered. They, on the contrary, only contemplate a dead nature, without ever seeing it revive. An eternal winter reigns with them. O let us bless the bountiful hand which has appointed for us so happy a lot! Far from lamenting our fate, let us glorify the Lord, who has planned it with so much wisdom and goodness; and if we, at present, in our houses, or in the society of friends, pass the winter agreeably, let us think of those unfortunate people who are deprived of these pleasures, to which custom, and the very enjoyment of them, makes us insensible. When we examine nature, such as she appears in our countries, let us say, penetrated with joy and gratitude, "I give thee thanks, O Lord, for having fixed me in a climate, where thy bounty is so magnificently displayed. May my joy, my

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gratitude, my endeavours to please thee, be proportionable to the blessings with which I am favoured preferably to other people; and may the fertility and beauty of the country I was born in, excite me to study and reflect upon thy works and thy blessings; and may I one day arrive at that heavenly habitation which our Saviour has prepared for us, and where I shall adore, with all the nations of the world, the miracles of thy goodness."

JAN. XI.

The Fertility which Snow gives to the Earth.

FROM appearances alone, one might say that snow cannot be useful to the earth; and one would rather believe that the cold moisture with which it penetrates the ground must be hurtful to trees and plants. But the experience of all ages frees us from this prejudice. It informs us, that nature could not give a better covering than snow, to secure the corn, the plants, and trees, from the bad effects of cold. Though it appears cold to us in itself, it shelters the earth from freezing winds; it maintains the warmth necessary for the preservation of seeds, and contributes even to swell them, by the moisture of the saltpetre it contains. Thus, even at this season, God prepares what is necessary for the support of the beings he has formed, and provides beforehand for our food, and that of an infinite number of animals.

Nature is always active, even when she appears to us to rest; and she is doing us real services, when she seems to refuse it. Let us admire, in this, the tender care of the divine Providence. Behold, how, in the severest season, he is attentive to our welfare, and how, without any labour of ours, he silently prepares

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for us all the treasures of nature! With such striking proofs of his beneficent care, who could give way to fears and anxiety? what God does every winter in nature, he does daily for the preservation of mankind. What appears to us useless or hurtful, contributes in the end to our happiness; and when we think that God does not interest himself about us, it is then that he is forming plans which are hidden from us, and which, in discovering themselves, work for our deliverance from such and such evils, and obtain for us such and such blessings as we did not dare to hope for.

In the mean time, God has not only designed that the snow should cover the earth, but that it should also make it fruitful. How much care and trouble it costs us to give the necessary manure to the fields, and how easily it is done by nature!—The snow, which possesses this virtue, is much more useful than rain and other manures. When it is softened by the sun, or, if a temperate air dissolves it by degrees, the saltpetre it contains enters deep into the earth, penetrates and gives life to the shoots of the plants.

Who is there that will not remember, on this occasion, the emblem under which God represents to us the wholesome efficacy of his word? "As the rain and the snow descend from heaven, and return there no more, but water the earth, and cause it to grow and flourish; as it gives the seed to the sower, and bread to him who eats; so likewise shall the word of my mouth be. It shall not return back to me without effect; but it shall do all that in which I have taken a pleasure, and shall prosper in the things for which I have sent it."—We live at a time in which this prediction is accomplished in a very striking manner. Whole provinces, kingdoms, even great part of our globe, which was formerly buried in the darkest ignorance, superstition, and incredu-

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lity, are now enlightened by the gospel. We feel the happy influence, even in our days, of the word of the living God. How many hardened hearts has it triumphed over! How many good works, what pious fruits, has it not produced! O may the divine grace ever find in our hearts a soil well disposed to feel its salutary influence.

JAN. XII.

Contemplation of the Starry Heavens.

THE sky at night presents us a sight of wonders, which must raise the astonishment of every attentive observer of nature. But from whence comes it, that so few consider the firmament with attention? I am willing to believe, that in general it proceeds from ignorance: for it is impossible to be convinced of the greatness of the works of God, without feeling a rapture almost heavenly. O how I wish to make you share this divine pleasure!—Raise your thoughts for this purpose towards the sky. It will be enough to name to you the immense bodies which are strewed in that space, to fill you with astonishment at the greatness of the Artificer. It is in the centre of our system that the throne of the sun is established. That body is more than a million of times larger than the earth. It is one hundred millions of miles distant from it, and, notwithstanding this prodigious distance, it has a most sensible effect upon our sphere. Round the sun move nineteen globular bodies, seven of which are called planets, the other twelve, moons or satellites; they are opaque, and receive from the sun, light, heat, and perhaps also their interior motion. Georgium Sidus, Saturn, Jupiter, Mars, the Earth, Venus, and Mercury, are the names of the seven principal planets. Of these

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seven, Mercury is nearest the sun; and for that reason is mostly invisible to the astronomer. As he is near nineteen times smaller than our earth, he contributes but little to adorn the sky. Venus follows him, and is sometimes called the morning, and sometimes the evening star. It is one of the brightest of the heavenly bodies, whether it precedes the sun-rise, or succeeds the setting sun. It is near as large again as our earth, and is about sixty-eight millions of miles distant from the sun. After Venus comes our earth, round which the moon moves as a secondary planet. Mars, which is the fourth planet, is seven times smaller than our globe; and its distance from the sun is one hundred and forty-four millions of miles. Jupiter, with his belt, is always distinguished by his splendour in the starry sky: it seems in size to surpass all the fixed stars; it is almost as bright as Venus in all her glory, except that the light of it is less brilliant than the morning star. How small is our earth in comparison with Jupiter! there would be no less than eight thousand globes like ours necessary to form one equal in size to that of Jupiter. Saturn, whose distance from the sun is upwards of nine hundred millions of miles, was thought the remotest planet, until the late discovery of the Georgium Sidus, whose distance is eighteen thousand millions of miles, and its magnitude eighty-nine times greater than our earth. In the mean time, the sun, with all the planets which accompany it, is but a very small part of the immense fabric of the universe. Each star, which from hence appears to us no larger than a brilliant set in a ring, is in reality an immense body, which equals the sun both in size and splendour. Each star, then, is not only a world, but also the centre of a planetary system. It is in this light we must consider the stars, which shine over our heads in a winter night. They are distinguished

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from the planets by their brilliancy, and because they never change their place in the sky. According to their apparent size, they are divided into six classes, which comprehend altogether about three thousand stars. But though they have endeavoured to fix the exact number of them, it is certain they are innumerable. The very number of stars sowed here and there, and which the most piercing eye can with difficulty perceive, prove that it would be in vain to attempt to reckon them. Telescopes, indeed, have opened to us new points in the creation, since, by their assistance, millions of stars are discovered. But it would be a very senseless pride in man, to try to fix the limits of the universe by those of his telescope.

If we reflect on the distance between the fixed stars and our earth, we shall have new cause to admire the greatness of the creation. Our senses alone make us already know that the stars must be farther from us than the planets. Their apparent littleness only proceeds from their distance from the earth. And, in reality, this distance cannot be measured; since a cannon-ball, supposing it always to preserve the same degree of swiftness, would scarce, at the end of six hundred thousand years, reach the star nearest to our earth. What then must the stars be? their prodigious distance and their brightness tell us,—they are suns which reflect as far as to us, not a borrowed light, but their own light: suns which the Creator has sown by millions in the immeasurable space; and each of which is accompanied by several terrestrial globes, which it is designed to illuminate.

In the mean time, all these observations, however surprising they are, lead us, at the utmost, but to the first limits of the creation. If we could transport ourselves above the moon; if we could

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reach the highest star over our heads, we should discover new skies, new suns, new stars, new systems of worlds, and perhaps still more magnificent. Even there, however, the dominions of our great Creator would not end; and we should find, with the greatest surprise, that we had only arrived at the frontiers of the worldly space. But the little we do know of his works, is sufficient to make us admire the infinite wisdom, power, and goodness, of our adorable Creator. Let us stop here, then, and reflect how great must be that being who has created these immense globes! who has regulated their course, and whose mighty hand directs and supports them! And what is the clod of earth we inhabit, with the magnificent scene it presents to us, in comparison of the beauty of the firmament! If this earth were annihilated, its absence would be no more observed than that of a grain of sand from the sea-shore. What are provinces and kingdoms in comparison of those worlds? Nothing but atoms which play in the air, and are seen in the sun-beams. And what am I, when I reckon myself among this infinite number of God's creatures? How am I lost in my own nothingness! But however little I appear in this, how great do I find myself in other respects!—"How beautiful this starry firmament which God has chosen for his throne! What is more admirable than the celestial bodies! Their splendour dazzles me; their beauty enchants me. However, all beautiful as it is, and richly adorned, yet is this sky void of intelligence. It knows not its own beauty; while I, mere, clay, whom God has moulded with his hands, am endowed with sense and reason." I can contemplate the beauty of these shining orbs: still more, I am already, to a certain degree, acquainted with their sublime Author; and I partly see some rays of his glory. I will endeavour to be more

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and more acquainted with his works, and make it my employment, till, by a glorious change, I rise above the starry regions.

JAN. XIII.

Discoveries made by means of the Microscope.

NATURE is in small objects what she is in the great ones. There is no less order and harmony in the construction of the mite than in that of the elephant. The only difference is, that the weakness of our sight prevents us from penetrating into the nature and organization of small bodies, which often escape our eyes, and which we can only perceive by the assistance of glasses. Microscopes have made us acquainted with a new world of vegetables and animals. They teach us, that objects, which the naked eye cannot discover, have extent, parts, and form. Let us mention some examples of it, to lead us to praise God, whose glory manifests itself so wonderfully in small objects. Every grain of sand appears round, when we examine it with our eyes only, but, by the assistance of a glass, we may observe that every grain is different, both in size and shape. Some are perfectly round, others square, others conical, but mostly irregular. And what is still more astonishing is, that, by means of a microscope, which makes objects appear a million of times larger than they are, we may discover, in the grains of sand, a new animal world: for it has been found, that their cavities contain insects. In cheese there are little worms called mites, which to the naked eye appear mere dots, while, with a microscope, they are proved to be insects of a singular figure. They have not only eyes, mouth, and feet, but a transparent body, furnished with long hair in the form of prickles.

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As for the region of plants, it is found in the mouldy substance which usually sticks to damp bodies. It shews you a thick forest of trees and plants, where the branches, leaves, flowers, and fruit, can be clearly distinguished. The flower has a long white transparent stalk. Before it opens, the bud is but a little green ball; and it does not become white till it has blown. You would as little expect to find these objects in mouldy substances, as that the meal which covers the wings of a butterfly should be a heap of little feathers, if the microscope had not proved the truth of it. But we have no occasion to carry our researches to remote subjects. Let us limit them to what relates to ourselves. Examine with a microscope the surface of your skin, and you will find that it resembles the scaly skin of a fish. It has been computed that a grain of sand could cover 250 of these scales, and that one only of these scales covers 500 pores, and consequently that a space, equal to a grain of sand, contains 125,000 pores.

Thus we see how great our Creator is, even in things which prejudice makes us consider as trifles. What an immense number of creatures has he spread over the earth! Those we see are but the least, and perhaps the meanest of God's works. How many objects in nature are concealed from us! We already know above thirty thousand plants, and of insects several millions of species. But what is that in comparison of the whole! If the bottom of the sea, and of rivers, could be open to our sight; if we could transport ourselves to other planets; how would our astonishment increase at the immense number of God's creatures. How wonderfully we experience that he has displayed as much wisdom in the most minute objects as in the greatest! Nature proves herself as complete and regular in her smallest productions as in those prodigious

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bodies, whose circumference is calculated by millions. The Creator provides with the same goodness for the wants of the insect, which crawls in the dust, as for those of the whale, which appears like an island in the midst of the waves. Let us imitate in this the example of the Deity: Let the least of creatures feel our benevolence, since our common Author vouchsafes to preserve their existence.

JAN. XIV.

The Advantages of Night.

WE are, it is true, deprived of some pleasures, now that the sun withdraws its light from us so soon, and that the greatest part of our time is passed in darkness. Nevertheless, we have no cause to complain of this arrangement in nature. As the mixture of pleasure and pain, of good and evil, is always wisely ordained; so do we find the same provident goodness of our Creator in this remarkable variation in our climate. And it may be reasonably maintained, that the winter nights are more advantageous than hurtful to us; or, at least, that their apparent inconveniences are compensated or softened by a thousand blessings too little acknowledged. Should we be as well convinced as we are of the use of the sun; and would its light excite in us the same sensation of pleasure, if the being deprived of it did not lead us to feel the advantage of it? Each night may remind us of the mercy of God, who, for the good of mankind, has spread light and beauty over the earth; it may remind us of the misery in which we should languish, if day did not succeed the darkness. And does not even darkness obtain for us a great advantage, by inviting us (from the tranquillity and repose which attends it) to enjoy a sweet sleep? How many workmen, who, in

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the day, waste their strength in our service, and whose labour, hard in itself, is also attended with disagreeable sensations! O how they bless the night, which suspends their labour, and brings them ease and sleep! In general, we are too selfish, in measuring the advantages and inconveniences of night, merely by the use or hurt we think we draw from it. If long nights are disagreeable to some, to how many others are they a blessing! In certain points, the night is favourable to the huntsman and fisherman. Without it the astronomer could not have formed an idea of the distance, the size, the course, and the infinite number, of planets and stars; nor could the pilot make use of the northern star, if it was always daylight. Considered in another way, night still appears to me a benefit to mankind, in lessening our wants, and in putting an end to those, which in the day time cost us many cares. What expence does not conveniencies and custom require, without which we should scarce think we enjoyed life? How many families, oppressed with want, begin the day with anxiety, and end it in hard labour? Night comes, and suspends care and misery. To be happy, nothing but a bed is wanting; and if sleep closes our eyes, all our wants are satisfied. Night, in some degree, equals the beggar with the monarch. Both enjoy a blessing which cannot be purchased. O how gracious that being who combines all things for the happiness of mankind! Most things, which are called evils, are only so to those who let themselves be carried away by prejudice and passion: whilst, if they were considered as they ought to be, it would appear that these apparent evils are real blessings to the world. We may be assured, that several millions of our fellow-creatures, who are in the day-time employed in hard work, or fatiguing labour; others, who have groaned all day under the yoke of an enemy to humanity; a

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number of travellers by sea and land, will bless God at the approach of night, which brings rest with it: and let us also bless him the beginning of each night. We shall undoubtedly do so, if, having the wisdom to employ the day well, we acquire a right to a sweet and sound sleep. The shorter our days now are, the higher we ought to value every hour, and make a prudent use of them. The night approaches, in which it will no longer be in our power to work or act. But that long night will still be to us a blessing, if we enjoy in the grave that peace and rest which are the fruits of Christian labours.

JAN. XV.

Reflections on Myself.

IT is reasonable to turn one's eyes sometimes from foreign subjects to one's self. It has too often happened to me, in the reflections I have made on the things around me, to lose sight of myself; or, at least, I have not always endeavoured to raise in my heart the gratitude and veneration which the sight of the starry heavens, and the blessings of the earth, ought naturally to produce. I will now reflect on what most intimately concerns me, and convince myself more and more, that, as a man, I am not less the master-piece of divine power and wisdom, than those prodigious bodies, the greatness of which astonishes the imagination. How admirable is the union of my body and soul, and how incomprehensible is their connection, in acting reciprocally. I daily experience, that, when the rays which light exterior objects strike my eyes, my soul receives the idea of the size, the form, and colour, of those objects. I feel that, when there is raised in the air a certain undulating motion, my soul receives the idea

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of a sound. By this means, I have a perception of a thousand changes which happen around me, and even of the thoughts of other men. I experience every moment, that, as soon as my soul wishes it, my body transports itself from one place to another; that it exerciseth its power over my arms, my hands, and my feet: in a word, all my limbs are disposed to obey every act of its will. These facts are incontestible; and yet I cannot explain the manner in which they are effected. In this mutual influence of body and soul, there is a wisdom, a wonderful art, which I cannot fathom: and the whole result of my inquiries into it is surprise and admiration. If I consider my body separately, I find it also a master-piece of the creative hand. Here, nothing is superfluous, nothing is wanting: each limb is placed in the manner best adapted, either for the use of the body, or for its ornament. Could I wish for a limb more than those which compose a perfect body? And suppose, on the other hand, that even one only was wanting, or that my limbs were transposed, so that the eyes, for example, were set in my feet, or placed where the ears are, what inconvenience, what deformity, it would be! Of course, the exterior form of my body is already disposed with much wisdom. But the interior parts of it are still more admirable. My body was to serve more than one purpose, and to fill different functions. It was first to be the means by which the soul was to be informed, in different ways, of the presence of objects not within itself. The organs of sight, of smell, of hearing, of taste, and of feeling, answer this end; and each of them is a miracle of divine power and wisdom. But, in order that the body should transmit to the soul different sensations of the exterior objects, it was necessary it should be moveable; and, for this purpose, how many of its parts concur? The bones, the joints, the sinews, the mus-

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cles or fleshy parts, susceptible of extension or contraction, give me the power of moving in a thousand ways. In the mean time, as a machine, as wonderful as my body is, must suffer a continual waste, by its motions and functions, it was necessary, for the subsistence of the machine, that its losses should be repaired; therefore, other parts, besides those already mentioned, were necessary; some to receive the nourishment; others to grind it; to separate the juices; to make these juices circulate through the whole body; and to distribute as much of it as each limb requires, &c. All those parts actually exist in my body, and answer perfectly well the end for which they were designed.

I bless thee, O Lord, for having made me so wonderfully: all thy works are admirable; and my soul takes a pleasure in acknowledging it. To thee be praise and thanksgiving: let the harp and the psaltery celebrate thy praise. I am one of the prodigies of thy power, O Creator and Preserver! My body, formed by thy divine hand, and every sense, witness thy glory. Grant that I may praise thee each time that I exercise the faculties of my body, either when I breathe, walk, act, or rest. May I rejoice eternally in thee; and may my body be a temple, in which thy Spirit will manifest its presence, and establish its dwelling for ever.

JAN. XVI.

The Hurt occasioned by extraordinary Cold.

WHY are we so ready to remark whatever inconvenience the laws of nature may sometimes occasion? Why do we dwell upon it, and murmur at it, while we pass so lightly over the many striking advantages it obtains for us? Men, in this respect, act towards God as they generally do to-

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wards each other. A slight offence, the least harm they receive from their best friend, or their benefactor, often effaces the remembrance of the essential services that have been done them. Their ingratitude and pride lessen the value of the latter, and make them consider the other as considerable injuries. It is particularly at this season that the remark is necessary. Men are attentive only to the evils which the cold may occasion, without considering the good that even the frost may do to the earth; or, at least, without thinking of it with gratitude. If they discover the least harm; if any part of the great *whole* should be in a suffering state, they think themselves authorised to murmur against God, without considering that nature, taken in the whole, draws great advantage from the cold.

Let us now weigh, without partiality, the advantages and the evils which may be attributed to it; and the result of this inquiry will be, to convince us how little reason we have to blame the government of a wise and good Providence. It is true, that severe cold has its inconveniencies, and troublesome consequences. Sometimes, the water freezes to such a depth, that it is impossible to make use of the springs. The fish die in the ponds. The rivers are covered with flakes of ice, which sometimes overflow, and make great ravages. The water-mills are stopped, which soon produces a general want of bread. The wood for firing fails, or, at least, becomes very dear. Vegetables suffer in many ways. The winter seeds freeze, if they are not covered. The trees and plants die. Several animals sink through cold and hunger. The health of man, and even his life, is often exposed to danger from it. These are some of the most striking evils which the severity of the season can occasion. But how many winters do we pass without them! And though even some animals should sink under it, and some

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plants perish with the cold, what is this in comparison of the advantages we draw from it? Let us be more circumspect in the judgments we form of the ways of God. Knowing so little the connection between the things of this world; not being able to take in the whole extent of the chain of causes and effects; how should we be capable of judging what is advantageous or hurtful in nature? And would it not be totally unjust and unreasonable, that a partial evil should lead us to blame the whole? Let us confess our ignorance, and strengthen ourselves in the comfortable persuasion, that there is much more good than evil in the world; much more cause for content, than subjects for affliction. And let us be certain that many things, which our self-interest makes us consider as hurtful, contribute to the general good. With this manner of thinking, we shall be calm in the midst of all events; and, whatever be our fate, we shall never cease to bless our wise and beneficent Creator.

JAN. XVII.

The Repose of Nature during Winter.

THE winter days are days of rest to nature. In the preceding months, she employed herself in fulfilling the designs of the Creator, by labouring in the service of his creatures. How rich was the spring in blossoms! How many seeds it opened! And what abundance of fruit the summer has ripened for us to gather in autumn! Each month, each day, we receive some presents from nature. Is there a single instant in which she has not pleased our sight, delighted our smell, or indulged our taste? and, has she not often satisfied them all at the same time! Like a good mother of a family, she employed herself from the morning

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the evening of the year, in procuring for us, r favourites, the necessaries, conveniencies, d sweets of life. Clothing, food, amusement, has been drawn from her maternal bosom. It for us she has caused the grass to grow; that e has loaded the trees with blossoms, with ıves, and with fruit. It is for us she has cover- the meadows with corn. For us, the vine ars its invigorating fruits. For us, the creation adorned with a thousand charms. Tired of so ıny cares, nature now rests; but it is only to llect new force, to be employed again for the od of the world. However, even this rest, ıich nature enjoys in winter, is a secret activity, eparing in silence a new creation. Already e necessary dispositions are making, that the serted earth may recover, at the end of a few ınths, the children she has lost. Already the rn shoots, which is to serve us for food. Al- ıdy the fibres of plants insensibly open, which e to adorn our gardens and fields. Here, again, beneficent Creator! I adore thy power and sdom. The rest which nature takes is not less eresting to us, nor less worthy of entering into e plan of thy wise providence, than the activity e shews in spring and summer. Thou hast com- ıed the several revolutions of the earth. Thou st formed the most intimate connection between em; and equally divided its rest and labour. has been thy will that each sun should vary e scenes of nature, in the time and manner ıst proper for the perfection of the whole. If ıave been so senseless as to blame any thing in e government of this world, pardon, O God, temerity. I discover, and am more and more ıvinced, that all the plans of thy providence, wever extraordinary they may appear to my ak reason, are full of wisdom and goodness: present, that I see the earth covered with a ntle of snow which keeps it warm, I will

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reflect on the good that results from it: for how could I promise myself flowers and fruit, if nature did not, at this time, enjoy some rest?—How could I chant the harvest hymn, if thou didst not already, under the snow and ice, dispose the seed to flourish? Yes, Lord, it is thou, who, in granting rest to the earth, enrichest man with a thousand blessings. And for me also, O Father! there will come a day of rest; a day in which I shall rest from all trouble, sorrow, or cares. Thou hast wisely ordained the time I should devote to activity. It is now the spring and summer of my life, which must be employed in the service of my fellow-creatures. The autumn will soon come. Grant, that I may then resemble one of those fruitful trees, which pours upon us fruit in abundance. But, in the winter of life, when I shall be covered with grey hairs, and full of days, I could wish that my rest should be as honourable and beneficent as that of nature in winter. How happy should I be, if my contemporaries should say, when speaking of me, that old man formerly devoted his youth to endeavours to serve mankind: His life has never been void of activity, of use, of benedictions: now, even his calm old age is not idle: by his wise experience, he contributes to the happiness of his family and friends: he labours at least for the world to come, of which he will soon be an inhabitant.

However, the repose that I can promise to myself here, is little else but a preparation for new troubles. O how I rejoice in that which awaits me in the grave, and in the bosom of eternity!—There, I shall enjoy an uninterrupted repose!—There, the remembrance of the sorrows and afflictions which I shall have got over here, will fill my heart with inexpressible joy. In the firm hope of that repose which is reserved for me, I will apply myself with zeal to the fulfilling of all the duties to which I am called, and will devote

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my talents and powers to the glory of God, and the good of my fellow-creatures. Strengthen me, by thy grace, O my God, and my Saviour, in this holy resolution.

JAN. XVIII.

The Laplanders.

I BEGIN this meditation with a lively sense of gratitude towards my Creator, and of pity to those of my fellow-creatures to whom nature has more sparingly distributed her blessings. I fix my eyes now on the Laplanders, and the inhabitants of the lands nearest the Arctic pole: mortals, whose taste and manner of living, when compared with ours, are not the happiest. Their country is formed of a chain of mountains, covered with snow and ice, which does not melt even in summer, and, where the chain is interrupted, is full of bogs and marshes. A deep snow overwhelms the valleys, and covers the little hills. Winter is felt during the greatest part of the year. The nights are long; and the days give but a dim light. The inhabitants seek shelter from the cold in tents, which can be removed from one place to another. They fix their fire place in the middle of it, and surround it with stones. The smoke goes out at a hole, which also serves them for a window. There they fasten iron chains, to which they hang the caldrons in which they dress their food, and melt the ice which serves them for drink. The inside of the tent is furnished with furs, which preserve them from the wind, and they lie on skins of animals spread upon the ground. It is in such habitations that they pass their winter. Six months of the year are to them perpetual night; during which they hear nothing round them but the whistling of the wind, and the howling of the

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wolves, who are running every where in search of their prey. How could we bear the climate and way of life of those people? How much we should think ourselves to be pitied, if we had nothing before our eyes but an immense extent of ice, and whole deserts covered with snow; the absence of the sun still making the cold more insupportable? and if, instead of a convenient dwelling, we had only moveable tents made of skins; and no other resource for our subsistence, but in painful and dangerous hunting for it; if we were deprived both of the pleasures which the arts produce, and the society of our fellow-creatures, to sweeten life?

Are not these reflections proper to make us observe the many advantages of our climate, so little attended to? Ought it not to animate us to bless the divine Providence for delivering us from such distresses and inconveniences, and for distinguishing us by a thousand advantages: yes: let us ever bless that wise Providence: and, when we feel the severity of the season, let us return thanks that the cold is so moderate where we dwell, and that we have such numerous ways of guarding against it. Let us also bless the almighty Governor of the universe, for granting us, in the midst of the desolate image which winter presents, the delightful prospect of spring, the very idea of which comforts and enables us to support the present evil.

But, is the inhabitant of northern countries so unhappy as we imagine? It is true, that he wanders painfully through rough valleys and unbeaten roads, and that he is exposed to the inclemency of the seasons. But his hardy body is able to bear fatigue. The Laplander is poor, and deprived of all the conveniences of life; but is he not rich, in knowing no other wants than those which he can easily satisfy? He is deprived for several months of the light of the sun;

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but, to make the darkness of the night supportable, the moon and the Aurora Borealis come to light his horizon. Even the snow and ice, in which he is buried, does not make him unhappy. Education and custom arm him against the severity of his climate. The hardy life he leads, enables him to brave the cold: and for the particular wants which are indispensible to him, nature has made it easy for him to obtain them. She has pointed out to him animals whose fur saves him from the sharpness of the air. She has given him the rein-deer, which furnishes him, all at once, with his tent, his dress, his bed, his food, and his drink; with which he undertakes long journies, and which, in a word, supplies almost all his wants; and the maintenance of it is no expence or trouble to him. If, in the midst of all the misery of their condition, these poor mortals had a more perfect knowledge of God, a knowledge such as revelation gives us; if, less savage and insensible, they could draw from friendship those sweets which improve life, if it were possible, I say, to join these precious advantages to the tranquillity of mind which forms their character, those supposed unhappy people, whose kind of life frightens our depraved imaginations, would not be so much to be pitied as we think. And, if it is true, that the idea we form of happiness depends more on opinion than on reason; if it is true also, that real happiness is not fixed to particular people, or particular climates, and that, with the necessaries of life, and peace of mind, one may be happy in every corner of the earth; has not one right to ask, What the Laplander wants to make him happy?

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JAN. XIX.

The Wise Ordinance of our Globe.

HOWEVER limited the human mind may be, however incapable it is of going to the bottom of, or even conceiving the whole of the plan that the Creator executed in forming our globe, we may notwithstanding, by the use of our senses, and the faculties with which we are endowed, discover sufficient to make us acknowledge and admire the divine wisdom. To convince us of it, we need only reflect on the form of the earth. It is known to be almost in shape like a ball. And with what view did the Creator choose that form? In order that it should be inhabited, over the whole surface of it, by living creatures. God would not have accomplished this purpose, if the inhabitants of the earth had not every where found sufficient light and heat; if water had not been easily spread in all parts of it; and, if the circulation of wind had met with obstacles any where. The earth could not have any form more proper to prevent these inconveniencies. This round form admits light and heat (those two things so necessary to life) all over our globe. Without this form, the revolutions of the day and night, the changes in the temperature of the air; cold, heat, moisture, or dryness, could not have taken place. If our earth had been square; if it had been conic, or an hexagon, or any other angular form, what would have been the consequence? A great part, and even the greatest part, of this earth, would have been drowned; while the rest would have languished with drought: some of our countries would have been deprived of the wholesome circulation of wind, while others would have been torn to pieces with

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continual storms. When I reflect on the enormous mass which composes our globe, I have new reason to admire the supreme wisdom. If the earth was softer, or more spongy than it is, men and animals would sink into it. If it was harder, more compact, and less penetrable than it is, it would resist the toil of the labourer, and would be incapable of producing and nourishing that multitude of plants, herbs, roots, and flowers, which now spring out of its bosom. Our globe is formed of regular and distinct strata; some of different stones, others of several metals and minerals. The numerous advantages which result from them, particularly in favour of mankind, are evident to all the world. Where should we have sweet water, so necessary to life, if it was not purified, and in a manner filtered, by the strata of gravel which are sunk a great depth in the earth? The surface of the globe offers a varied prospect; an admirable mixture of plains and valleys, of little hills and mountains. Who is there that does not see clearly the earth would lose if it was an even plain! Besides, how favourable is the variety of valley and mountain to the health of living creatures! How much more convenient to lodge so many creatures of different sorts! How much more proper to produce the various species of plants and vegetables! If there were no hills, the earth would be less peopled with men and animals! We should have fewer plants, fewer simples and trees: we should be totally deprived of metals and minerals: the vapours could not be condensed; and we should have neither springs nor rivers.

Who can help acknowledging that the whole plan of the earth, its form, its exterior and interior construction, are regulated according to the wisest laws, which all combine towards the pleasures and happiness of living creatures?

Supreme Author of Nature, thou hast ordered

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every thing on earth with wisdom! Wherever I turn my eyes; whether I examine the surface, or penetrate into the interior structure of the globe thou hast appointed me to inhabit, I every where discover marks of profound wisdom and infinite goodness.

JAN. XX.

Short Meditations on the Works of God, drawn from the Holy Scriptures.

"HEARKEN unto this, stand still, and consider the wondrous works of God *." "He hath established the world by his wisdom, and hath stretched out the heavens by his direction: for he is the former of all things †."

"And God said, Let there be light, and there was light. And God saw the light that it was good; and God divided the light from the darkness: And God called the light Day, and the darkness he called Night ‡." "Thou, even thou, art Lord alone: Thou hast made the heaven, the heaven of heavens, with all their host: the earth, and things that are therein; the seas, and all that is therein; and thou preservest them all; and the host of heaven worshippeth thee §." "O Lord my God, thou art become exceeding glorious: Thou art clothed with majesty and honour. Thou coverest thyself with light as with a garment, and spreadest out the heavens like a curtain: Who layeth the beams of his chambers in the waters: Who maketh the clouds his chariots: Who walketh on the wings of the wind. Who maketh his angels spirits, his ministers a flaming fire. Who laid the foundations

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* Job xxxvii. 14. † Jer. x. 12, 16. ‡ Gen. i. 3, 4. 5.
§ Jer. li. 6.

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of the earth, that it should not be removed for ever. Thou coveredst it with the deep as with a garment: The waters stood above the mountains *." "He stretcheth out the north over the empty space, and hangeth the earth upon nothing. He bindeth up the waters in his thick cloud, and the cloud is not rent under them. He divideth the sea with his power; and, by his understanding, he smiteth through the proud †." "For he maketh small the drops of water: They pour down rain according to the vapour thereof: which the clouds drop, and distil upon man abundantly. Also, can any understand the spreadings of the clouds, or the noise of his tabernacle? Behold, he spreadeth his light upon it, and covereth the bottom of the sea ‡." "It is from thence, as from a throne, that he sometimes judgeth the people, and sometimes scattereth abundance on the earth." "God thundereth marvellously with his voice; great things doth he, which we cannot comprehend: For he saith to the snow, Be thou on the earth; likewise, to the small rain, and to the great rain of his strength. Out of the south cometh the whirlwind, and cold out of the north. By the breath of God frost is given; and, the breadth of the waters is straitened. Also, by watering, he wearieth the thick cloud: He scattereth his bright cloud; and, it is turned round about by his counsels, that they may do whatsoever he commandeth them, upon the face of the earth. He causeth it to come, whether for correction, or an effect of his favour and mercy towards man §." "God is wise in heart and mighty in strength: Who hath hardened himself against him and hath prospered! Who removeth the

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* Psal. civ. 1, 7. † Job xxvi. 7, 8, 13. ‡ Job xxxvi. 27, &c.
§ Job. xxxvii. 5, &c.

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mountains, and they know not; who overturneth them in his anger: Who shaketh the earth out of her place, and the pillars thereof tremble: who commandeth the sun, and it riseth not, and sealeth up the stars; who alone spreadeth out the heavens, and treadeth upon the waves of the sea; who maketh Arcturus, Orion, and Pleiades, and the chambers of the south; who doth great things, past finding out; yea, and wonders without number*." "Thou didst cleave the fountain and the flood: Thou driedst up mighty rivers. The day is thine; the night also is thine; thou hast prepared the light and the sun: thou hast set all the borders of the earth; thou hast made summer and winter†." "He causeth an east-wind to blow in the heaven; and, by his power, he brought in the south wind‡." "He watereth the hills from his chamber. The earth is satisfied with the fruit of his works. He causeth the grass to grow for the cattle, and herb for the service of man, that he may bring forth food out of the earth§." "He giveth to the beast his food, and to the young ravens which cry‖." —The eyes of all wait upon thee, and thou givest them their meat in due season¶." "Thus saith the Lord thy Redeemer, and he that formed thee from the womb, I am the Lord that maketh all things, that stretcheth forth the heavens alone, that spreadeth abroad the earth by myself**." For, thus saith the Lord that created the heavens, God himself that formed the earth, and made it, he hath established it, he created it not in vain, he formed it to be inhabited, I am the Lord, and there is none else††." "Remember the former things of old, for I am God, and there is

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* Job. ix. 4, &c. † Psal. lxxiv. 15, &c. ‡ Psal. lxxvii. 26.
§ Psal. civ. 13, 14. ‖ Psal. cxlvii. 9. ¶ Psal. cxlvi. 15.
** Isaiah xliv. 24. †† Ib. xlv. 18.

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none else; I am God, and there is none like me*." "I form the light, and create darkness: I the Lord do all these things†."

JAN. XXI.

Wonders of the Human Voice.

THE human voice is the greatest master-piece of the Creator. Whether we consider its principle, its variations, or its organs, it is impossible to fathom its admirable mechanism. Let us now try to reflect silently upon it. What is it that enables us to utter sounds? That faculty depends on the construction of the windpipe. The little opening that is in it, occasions a sound, when the air we have breathed is expelled with quickness. The windpipe is composed of circular gristles, which are held together by an elastic membrane. At the entrance is a little lid, which opens to let the air out from that passage. It opens more or less, to modify and multiply the tones of the voice; and it closes when we swallow in order to keep out the food, which must pass over it, in its way to the stomach. Experience tells us, that the extent of the human voice is twelve full tones. To produce this variety, then, it was necessary that the windpipe should be divided into twelve equal parts. And, as its two sides, when stretched, are distant from each other the tenth part of an inch, one may calculate from thence, that each tone of the voice may be subdivided into an hundred others; also, that a man is able to produce 2400 different tones, which may all be distinguished by the ear. However, in regard to these properties, though so sur-

* Isaiah xlvi. 9. † Ib. xlv. 7.

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prising, we have few advantages over the animals. But the prerogative of man consists in this—That we can compress the air, and modify the voice, so as to pronounce letters and words. The palate, the teeth, and lips, contribute much to this operation.

Let us dwell on the manner in which we utter the five vowels, which have only a simple sound. When we pronounce the letter *a*, the sound is quite different from that of *e*, *o*, *i*, *u*; though it was to be pronounced with the same tone. The reason of this difference is one amongst the number of the impenetrable mysteries of nature. To pronounce the five vowels, the mouth must be more or less opened; and, for this purpose, the human mouth is formed differently from that of any animal. Even those birds, who learn to imitate the human voice, can never distinctly pronounce the several vowels; and this is what makes the imitation so imperfect. As to the pronunciation of consonants, three of our organs contribute to it; particularly the lips, the tongue, and the palate. The nose also has its share. Try to stop it, and certain letters cannot be pronounced, but in an unintelligible manner. One thing, which proves the organization, which enables us to pronounce words, particularly wonderful, is, that no human art has ever been able to imitate it by any machine. Song, indeed, has been imitated; but not the articulation of sounds, or the pronunciation of different vowels. In several organs, there is a stop called the *human voice*; but it produces no tones, except such as resemble the diphthongs of *ai* or *ae*. And all the efforts of art cannot arrive at imitating one single word of those which we pronounce so easily.

Let these considerations induce us again to reflect on, and to praise the ineffable wisdom and great goodness which God shows in the formation

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of each part of our bodies! And may these reflections make us sensible of the value of the gift of speech, which so advantageously distinguishes us from every animal. How melancholy would the society of mankind be, and how much would the happiness of it be diminished, if we had not the faculty of communicating our thoughts by conversation; and if we could not pour out our hearts into the bosom of a friend! How much to be pitied, should our fate be, if we were of the number of those unhappy people, who have been, from their infancy, deprived of speech! Alas! there are several of these poor creatures living among us. Let it teach us, whenever we see them, to value our own happiness, and to return thanks unto God, for having, among the multitude of blessings with which he has enriched us, granted us also the gift of speech. Let us make use of this precious gift, since it is the intention of our Creator. But let it be to glorify the Supreme Being, to edify, to instruct, to comfort our fellow-creatures.

JAN. XXII.

The Duty of collecting our Thoughts in Winter.

THOSE who are solicitous to make use of every opportunity to improve their mind, will gladly be reminded of the obligation they are under, of employing even the winter days, so as to become days of comfort to their souls. It is easy to prove, how agreeable, as well as advantageous, this duty may be made. How perfect would our piety become, if each change, each new appearance of nature, led us to trace it up to God, whose glory is as manifest in winter as in any other season. When we behold the earth covered with snow, the rivers loaded with ice, the trees stripped of

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their leaves, all nature barren and desert, let us reflect on the Creator's views in thus ordaining it. With a little attention we shall at last discover, that every thing is planned with wisdom, and that all the laws of Providence combine for the general good. If, from the weakness and limits of our understanding, we can only take in the smallest part of God's designs, it is enough for us to know, that the ice, the snow, and all the phenomena of winter, serve, in the plan of Supreme Wisdom, to make the earth fruitful, and to prepare blessings for its inhabitants. How many objects are there for edifying reflections! We see the snow dissolve, and the ice melt in a moment! and behold how rapidly the days pass away! Ought not this to remind us of the frailty of our existence here? We inhabit a warm room, and have all the necessaries of life. Ought not these enjoyments to make us consider our poor fellow-creatures, who have neither food, fire, nor raiment? The short space between day and night ought naturally to lead us to reflect on the short duration of life, and the importance of redeeming the time, and making use of every hour. We see numbers imprudently exposing themselves on the ice. Does it not remind us of the levity and thoughtlessness of those mortals who give themselves up to the pleasures of the world? How many other objects at this season may furnish us subject for reflections of this sort, which must have a good effect upon the mind! If we endeavour, not only to employ the mind, but to mend the heart, all these objects may serve for that purpose: and we shall rejoice in every good thought, pious resolution, or comfortable image, they awaken in our souls. Let us imitate the bee; follow our inclination, and choose the finest flower. To a well-disposed mind, the most barren field is still rich in sweets. We may expect the greatest advantages from thus filling our time. It

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enables us to conquer sensuality, and to govern our hearts, which are so disposed to go astray. We need not have recourse to turbulent pleasures, in order to banish *ennui*. When others seek dissipation in worldly follies, we shall find much nobler and more lasting enjoyments, in contemplating the works of God, either in solitude, or in a chosen society of virtuous friends. For nothing can inspire a sweeter, purer satisfaction, than the raising one's heart above terrestrial objects, and partaking of that which employs the angels and the elect in heaven. What rapture to find God every where; to discover in the flake of snow, as well as in the flower of the spring; in the cold of winter, as well as in the heat of summer, the goodness and wisdom of the mighty Creator! And this rapture, which far surpasses all the pleasures of the world, we shall experience, if we learn the habit of reflecting upon it.

O Divine Spirit, may thy almighty power assist my weak heart! I wish to devote myself wholly to thee. But thou knowest that the world often draws me to it, and hinders my soul from taking its flight towards heaven. Deliver me from the bonds which still attach me to vain honours and pleasures; and grant that my soul may more and more rise to thee. How edifying will my death be, if I employ my life in so pious a way. How happy shall I be, when transported into heavenly abodes, where I may eternally improve in the contemplation of thy wondrous works! Where I may admire thy ways so full of wisdom; and, no longer engaged in trifling pursuits, I may draw, from the meditation of sublimer things, new motives for glorifying thy holy name.

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JAN. XXIII.

The Fear of Spectres.

THE long winter nights are the occasion of terror and uneasiness to a number of people, because they are tormented with the ridiculous apprehension of spectres. This superstitious fear was more pardonable in the time of our ancestors, as they had not such clear ideas of the nature of spirits, and as it was then favoured by religion itself. But there is reason to be surprised, that, in an age so enlightened as ours, such ideas and such fears can exist. It shews how ingenious man is to raise imaginary monsters, and to torment himself. Is it not enough that he should, from time to time, feel real evils? He can also create to himself fancied evils, and become unhappy because he thinks himself so. How is a miser tormented with the fear of robbers! the misanthrope, from his distrust of those about him! the discontented man, from his anxiety of what may happen!—Let us learn from hence to know the nature of the human heart, and to feel the necessity of watching over our imagination. If it deceives us in the night, by presenting to us frightful phantoms, it often, in the day time, produces illusions, by painting vice to us under attractive forms. Let us be as ready to avoid all temptations to evil, as we are to fly from the appearance of a spectre; but, in the former instance, man is bold and rash, and, in the latter, timid and fearful. From whence comes it, that this chimerical fear takes such a strong possession of some people, who are not in the least affected by much more alarming circumstances! The fear of a single ghost makes us shudder, while the certainty of being one day transported into a world of in-

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corporeal beings, makes no impression on our minds. Still more, though we know that every step draws us nearer the presence of the eternal and infinite Spirit, we feel no apprehensions about it. If death, or a dead person, was to appear to us at midnight, and declare to us that we should soon join him, the most intrepid man would be filled with fright and terror; he would make serious reflections upon the event, and would wait the issue with anxiety. But why are we so inattentive to the voice of God, which cries aloud, Prepare, O Israel, to meet thy God! How inconsistent to rest in security, when it would be prudent to fear! and to tremble when there is nothing to dread!

Thou, O my soul, yield not to vain fears of the night, but dread the Supreme Being, whose coming will fill with terror the most intrepid hero; so that he will say, in his anguish, Let the mountains fall upon me, and the little hills cover me. Let us fear, above all things, the displeasure of God. Let us dread the anger of the Holy of Holies. Then may we banish all other fear, and cry out with David, The Lord is my strength, of whom should I be afraid!

JAN. XXIV.

Subterraneous Fires.

BY digging a little deep into the earth, a greater degree of cold is felt than on the surface: because the latter is heated by the sun. From thence it is, that the inhabitants of hot countries can preserve ice to cool their drink the whole year. But if they dig fifty or sixty feet deep, the heat increases sensibly; and, if it is a still greater depth, it becomes so close, that it stops respiration, and puts out a candle. It is not easy to determine the,

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cause of this heat. Those who admit that there are concealed fires in every place under the earth, approach perhaps the nearest to the truth. But how this fire, so closely confined, can burn; what the substance is that feeds it, or how it can be burned without consuming, is what cannot be determined with certainty. There are phenomena on our globe, which prove the existence of subterraneous fires in a very formidable manner. From time to time there are terrible eruptions of fire. The two most remarkable mountains which produce such, are Etna in Sicily, and Vesuvius in the kingdom of Naples. The accounts given of these two volcanoes are frightful. Sometimes a black vapour only rises out of them; at other times a hollow roaring is heard; all at once it is followed by thunder and lightning, attended by an earthquake. Then the vapour clears up, and becomes luminous. Stones fly with violence, and fall again into the gulf which threw them out. Sometimes these eruptions are so violent, that large pieces of rock are hurled into the air, and turn round as swiftly as a foot-ball. The force of the interior air of these mountains is so prodigious, that, in the last century, pieces of rocks, weighing three hundred pounds, were thrown into the air, and fell again at the distance of three miles. However, even these explosions are not the worst; for, at certain times, the vitrified entrails of the earth boil up, and rise, till their formidable foaming runs over at the outside, and flows for the space of several miles through the neighbouring fields, where it swallows up every thing in its passage. Then, the torrent of fire lasts for several days. One wave rolls over another, till it reaches the sea. And even here its violence is such, that it continues to flow for some time without being extinguished in the waves of the ocean. Who can think, without terror, of the disasters which such eruptions occasion?

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Whole farms and villages, with their fertile plantations, are swallowed up. The meadows are consumed; the olive-trees and vines entirely destroyed. We are told, that, in one of the eruptions of Etna, the torrent of burning lava spread itself over fourteen cities; and that the roaring within the mountain was heard at twenty miles distance.

But wherefore these volcanos, which spread such terror and devastation on the earth? Why has the Lord created them? Why, instead of putting bounds to their fury, has he permitted them thus to distress his creatures? Who then am I, to dare to ask such questions? Have I a right to demand an account of the plans formed by Supreme Wisdom? The existence of these volcanos cannot be the work of chance; and I ought to conclude, that the Creator has wise reasons for ordering such to be. Besides, even in this, I find the beneficent hand which provides for the welfare of mankind. Whatever mischief these eruptions occasion, it is nothing in comparison of the advantage they are of, on the whole, to our globe. The bosom of the earth being full of fire, it was absolutely necessary that there should be volcanos, because they are the vents by which the force of that dreadful element is broken and weakened. And though the countries where the subterraneous fires collect in greatest quantities, are subject to earthquakes, they would be still more violent, if these volcanos did not exist. Italy would not be such a fertile country, if, now and then, the fire which the earth contains, had not found a vent in those mountains. And, after all, who knows if these frightful phenomena may not produce other advantages concealed from us, and if the influence of them may not extend over the whole globe? At least, this is enough to convince us that they contribute to fulfil the design of our Divine Author, so full of wisdom and

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goodness. And if there still remain things to us obscure and impenetrable, let us put our hands to our mouths, and say, "Lord, thy judgments are right and equitable, and thy ways impossible to discover: but who would not fear thee, O God of heaven, who doth such terrible things!"

JAN. XXV.

Comets.

THIS extraordinary star borrows its name from the vapour with which it is surrounded, and is undoubtedly one of the number of celestial bodies that belong to the system of our world. It moves round the sun, as well as the other planets; but it differs from all of them, by a motion peculiar to itself, by its orbit, and by its form. Seen through a telescope, it appears full of spots, and uneven; but the mist which surrounds it often conceals the figure of it. The size of comets differ frequently. Some are scarce equal to stars of the third and fourth class. Others, on the contrary, are larger than stars of the first magnitude. In the middle of it there appears a very thick nucleus, which sometimes separates, and becomes like the edge of the disk. Its form is not always perfectly round; nor is the light of it always equally strong and brilliant. Its tail, or beams, always opposite to the sun, are of so thin and transparent a substance, that the fixed stars may be seen through them. These beams extend sometimes from the horizon almost to the zenith, which gives to the whole star an appearance of great distinction. The farther the tail is from the comet, the more it enlarges; and its light decreases in proportion as its size increases. Sometimes it separates into several divisions of rays. This is part of the result of some exact observa-

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tions made by astronomers; but, undoubtedly, it is the least important of what should be known, in order to have a perfect knowledge of all that relates to those celestial bodies, many of which are out of the reach of our sight. Is the comet a watery planet, or a burning globe? This is what cannot be determined with any certainty; nor can the following questions be answered in a satisfactory manner.

Is that globe inhabited, which, somestimes near the sun, endures all its burning heat, and, at other times, going out of the line of the spheres, plunges into total darkness, where it seems as if the rays of the sun could never penetrate? Or else, has the Judge of the universe designed it for the punishment of his creatures? Is its coarse surface, exposed by turns to the most violent extremes of heat and cold, the abode of perverse beings reprobated by him?—Possibly, these wandering bodies may one day serve to divert the course of the planets; and by that means become the cause of their destruction. Or, are they still deserts, void and shapeless, as the earth was before the Creator made it habitable and fertile? And will not the fate of comets be determined till our globe shall be no more? The impossibility of our resolving these questions ought to convince us that the human knowledge is very limited. Men, however, often lose sight of this truth. For, if it were present to our minds, the appearance of a comet would not raise a thousand vain conjectures, which so ill agree with the limits of our understanding. Several consider a comet as the forerunner of the judgments of Heaven. Some read in them the fate of a nation, and the fall of empires. With others, they are presages of war, of the plague, or of inundation; in a word, of the most dreadful calamities. These superstitious people do not know, that a comet is a very natural appearance, the return of which can be

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exactly calculated; and consequently cannot, in any respect, interrupt the ordinary course of things. They do not consider that this star, as well as the planets, must have a design of very different importance from that which superstition gives to it. What! could Supreme Wisdom place those prodigious bodies in the sky, merely to announce to a small number of living creatures the fate that awaits them!

May the comet, when, overleaping the immense space which now separates it from our sight, it returns again, be to me, not a messenger of misfortune, but the herald of the majesty of God. I will adore the Supreme Being, who prescribes to it its course; who conducts it through an immeasurable æthereal space; and orders it sometimes to approach the sun, and sometimes to remove to the farthest limits of the planetary system. Each time it shines over my head, my soul shall soar, with a pious flight, towards that Supreme Being, who is the Arbiter and Sovereign of all worlds. Then will I dwell on that sublime idea, that I may soon perhaps become an inhabitant of the everlasting abode, where, surveying immense spaces of the heavens, I may discover millions of new worlds.

JAN. XXVI.

Snow.

PERHAPS on reading the title of this meditation, some may ask, if it is worth while examining into the cause of so common a phenomenon of nature. My design, notwithstanding, is to awaken attention to this wonder; and to shew, that the formation of snow has sufficient charms for a reflecting mind.

Snow consists of watery particles, which are

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frozen in the air. A frozen piece of water becomes ice. Snow differs from this only, in the water of the ice freezing, when it is of its usual density; and the water of the snow, when its particles are still separate, or reduced to vapour. Experiments have been made, which prove that snow is twenty-four times lighter than water; and that it fills up ten or twelve times more space, at the moment of falling, than the water produced from it when melted; which could not be the case, if the snow was not a water extremely rarified. But snow is not mere water; for the construction of its particles, and the effects it produces, are different from that of water and ice. In this respect, the manner in which the snow forms itself has something very remarkable in it.

When particles of vapour, collected together, freeze in the atmosphere, the saltpetre, dispersed in the air, comes and unites with it in the form of a little dart of a hexagonal shape. While a great number of such little darts unite together, the particles of water which are among them grow hard, and take the form of the saltpetre. This accounts for the flakes with six sides, which are composed of points like little needles, at each side of which, darts or smaller threads join themselves, though their form frequently alters when carried here and there by the wind. How wonderful the form of these flakes of snow would appear to us, if we were not accustomed to see them every year? But, because certain wonders occur often, is that a reason for being inattentive to them? No, far from it: let us be the more careful to examine into them, and to admire the power of God, who, in every season, shows himself so rich, so inexhaustible in means to provide for the conveniencies and pleasures of mortals. Have we a right to complain that winter does not supply variety of amusements for the senses and the

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understanding? Is it not an astonishing spectacle, to see that nature has formed even the flakes of snow with the most exact symmetry? to see such a prodigious number of them fall from the sky? to observe the several forms water takes under the creating hand of God? sometimes it forms itself into hail; sometimes it hardens into ice; and sometimes changes into snow, and into innumerable flakes of it. All these changes serve at the same time for the use and embellishment of the earth; and even in the smallest phenomena of nature, God shows himself great, and worthy our adoration. I will no longer look upon snow with indifference. Its form, and the advantages resulting from it, will lead me to thee, O Lord, who made it, and spreadest it upon the earth. To thee, O my God, who lovest thy works, and whom all nature obeys; who causest the snow to fall in flakes like wool; who spreadest the white frost like ashes; who casteth hail as in pieces; who ordereth the cold to bless and fertilize the earth; to Thee be all praise, honour and glory.

JAN. XXVII.

The Rapidity with which Human Life passes away.

OUR life is short and transitory. This is an incontestible proposition, though, to judge from the conduct of most people, one would not suppose it a received truth. Let us judge by our own experience: Ought not each step we have taken, from our births to this moment, to have convinced us of the frailty of life? Let us consider only with what swiftness, the days, the weeks, the months, and the years, have passed, or rather flown away. They were over, even before we perceived it. Let us endeavour to recal them to mind, and to follow them in their

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rapid flight. Is it possible to give an account of the different æras? If there had not been in our lives certain very remarkable moments, which made impression on our minds, we should be still less able to recollect the histories of them. How many years of our infancy, devoted to the amusements of youth, which we can say nothing of, but that they have glided away? How many others have passed in the thoughtlessness of youth; during which, misled by our inclinations, and given up to pleasure, we had neither the wish, nor the time, to look into ourselves? To these years succeeded those of a riper age, more capable of reflection. We then thought it was time to change our way of life, and to act like reasonable men; but the business of the world took possession of us to such a degree, that we had no leisure to reflect on our past lives. Our families increased, and our cares and endeavours to provide for them increased in proportion. Insensibly the time draws nigh, in which we arrive at old age; and perhaps, even then, we shall neither have leisure nor force of mind to recollect the past, to reflect upon the period to which we are come, upon what we have done, or neglected to do; in a word, to consider the purposes for which God placed us in this world. In the mean time, what can insure our ever attaining that advanced age? A thousand accidents break the delicate thread of life, before it comes to its full length. The child just born falls, and is reduced to dust. The young man who gives the highest hope, is cut down, in the age of bloom and beauty; a violent illness, an unfortunate accident, lays him in the grave. Dangers and accidents multiply with years: negligence and excess lay the seeds of maladies, and dispose the body to catch those that are epidemical. The last age is still more dangerous. In a word, half of those who are born are carried out of the world, and perish, in

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the short space of their first seventeen years. Behold the concise, but faithful history of life! O may we redeem those days, so short and so important, in learning how to number them, and redeem the time which flies so swiftly away! Even while we make these reflections, some moments are flown. What a precious treasure of hours and days should we not lay up, if, from the numberless moments we have to dispose of, we often devoted some of them to so useful a purpose! Let us think of it seriously; every instant is a portion of life impossible to recal, but the remembrance of which may be either the source of joy or sorrow. What heavenly enjoyment is it, to be able to look happily on the past, and to say to one's self with truth, "I have lived so many years, during which I have sowed a rich seed of good works; I do not wish to begin them again, but I do not regret that they have passed?" We should be able to hold this language, if we fulfilled the end for which life was given us; if we devoted our short space of time to the great interests of eternity.

JAN. XXVIII.

The Frost sometimes seen on Glass Windows.

THIS little phenomenon shews us what variety, order, and simplicity, there is in the smallest productions of nature. We often admire the extraordinary figures which frost upon the glass presents to us; but it seldom happens that this object is attended to as much as it merits, however unimportant it may be in itself. The phenomenon in question has its principle in the fluidity of fire. When it is confined in the warm air of a room, it tries to spread itself on all sides, and to penetrate that part where there is least matter

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homogeneal to its own. This is the reason it runs through the close texture of glass, which contains neither air nor heat. In going through glass it leaves at the inside, and near any opening, the particles of air and water to which it was united. It forms itself into a cloud, which thickens in proportion as the fire goes out of it, till there remains too little of it in the room to preserve the fluidity of the thickened particles of the water on the glass. They then congeal; and the saltpetre in the air, mixing with them, produces the variety of figures with which the glass is covered. The beginning, or the sketches of these figures, is formed by very small threads of ice, which insensibly unite, till the whole glass is covered with a coat of ice. These threads are the origin of all the figures; and the first weaving of these may be distinctly seen. We see at first some lines extremely fine, out of which lines come (nearly in the same manner as we see come out of a quill) some threads, which in their turn bear other branches. When it freezes hard, and the first coat of ice grows thick, it produces the most beautiful flowers and lines of every sort, sometimes strait, sometimes spiral.—There is reason to believe that this great variety of figures does not proceed entirely from the motion of the air, and the particles of fire, but in some measure from the little imperceptible chinks there are in glass. Whatever is the cause of the phenomena, it is certain that this sport of nature shews us much art, united with much simplicity.

Perhaps my readers may think trifling all that can be said on an object which has no other value than to please the sight for a short time; but it seems to me, that minute points of this kind have greatly the advantage of those which often fill up our time. With what frivolous matters, what nothings, are we sometimes amused? Would not certain phenomena of nature, which

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we consider as trifles, be as well worth thinking or speaking of! Such researches are agreeable to a mind desirous of information, however small the object. Let us only lay aside prejudice, and the childish ideas we form to ourselves of the works of nature, and we shall think differently. We shall often find, that master-pieces are to be discovered where ignorance perceives nothing but trifles. For nature shews her wisdom even in her smallest works; and it is that which distinguishes them constantly from the productions of art. In reality, can an object be too trifling, if it furnishes us with a subject for useful reflection? For my part, I do not disdain to read on frozen glass, a truth which may have great influence upon my happiness. Behold the flowers that the frost has drawn upon that glass! They are varied with art and prettiness, yet a ray of the noon-day sun effaces them. It is thus that fancy often paints every thing to us in the fairest light; but all that it represents to us most seducing, in the possession of worldly goods, are merely fine images, which disappear by the light of reason. The importance of this wise lesson is well worth the trouble of attending to the little phenomena which produced it.

JAN. XXIX.

The Use of Bread.

OF all the food which our beneficent Creator distributes to us with such profusion and variety, for the support of life, bread is, at the same time, the most common and the most wholesome. It is as necessary at the delicate table of a prince, as at that of a labourer; and the sick person is as much refreshed by it as an healthy one. It appears to be particularly designed for the food of

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man; for the plant which produces it can be made to grow in every different climate; and it is difficult to find, on the habitable earth, a country where wheat will not ripen, if it is cultivated properly. A very evident proof that we cannot do without bread, is, that it is almost the only food we do not tire of, though we eat it every day. All those costly and dainty dishes, which pride and luxury invent, soon cease to please our palates, if we make too frequent use of them. Whereas we always eat bread with pleasure; and the old man, who has made it his daily food for seventy years, will still eat it with pleasure, when he may have lost his relish for all other food. We ought to look up to our Creator each day, as we eat our bread, and praise him for his blessings granted to us. Let us choose of all food that which we like best: is there any more natural, more generally wholesome, more strengthening, or nourishing, than bread? The smell of the most precious aromatics is not so refreshing. The former, indeed, flies more to the head, and is more heating; but the smell of bread, simple as it is, may serve to convince us that it contains parts essentially proper to form and repair the nervous fluid. What demonstrates its nutritive quality is, that it dissolves and becomes like paste, as soon as it is moistened with water, and is consequently easy for the stomach to digest. Let us here reflect on the visible care the Creator has shown of our health, in appointing us this food. Our best juices are liable to corrupt: it was therefore necessary to give us nourishment which could resist corruption. Now this quality is in bread. As it is composed of vegetables, and has something acid in it, it is an excellent preservative against putrefaction. Certainly, we should be unworthy the bread that daily feeds us, if we were insensible to it as a blessing from God. Ought we not to thank this Father, so good.

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and so merciful, who maketh the earth produce bread to nourish and to strengthen us? Should we, like brutes, enjoy our food without thinking of him to whom we owe it? No: Surely it is enough, that, during our infancy, we received our food without being able to lift up our hearts in gratitude. Lord! now, that I know the hand which supports me, I will for ever bless thee for it. How can I better prove my thankfulness than by sharing the bread, which I possess in abundance, with those who have but a small portion of it? How many of thy children, O Father! are less happy, though perhaps they deserve to be more so than me. They have scarce bread enough, and are still less provided in other respects with means of subsistence. For my part, I have received all those advantages from thee; and I am ready to share them with my fellow-creatures, because they have the same right to thy favour.

JAN. XXX.

Our Duty in regard to Sleep.

A MELANCHOLY remark we have often occasion to mention is, that most people lie down to sleep with an inconceivable security. To consider it only as far as it relates to our bodies, the revolution produced by sleep, ought to appear to us of great consequence; but, if we consider it in still another light, if we were to form to ourselves all that might happen to us, while we are enjoying repose, it appears to me, that, in consequence, we could not, or ought not, to throw ourselves into the arms of sleep, without having taken proper precautions, and having, in a certain degree, prepared ourselves for it. In reality, it is not surprising that those, who, in their wak-

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ing hours, are so inconsiderate, so negligent of every duty, should be equally so in that which relates to sleep. Let us, however, learn in what manner we may glorify God; and act as becomes the charcter of a Christian in this respect. What thanksgivings are due to the Creator for the blessings of sleep! Some may not know the full value of it, as it may never have been denied to their wishes, when they have desired it. But how soon would sickness, sorrow, fear, or old age, deprive them of the sweets of repose! O! it is then that they would acknowledge, that sleep is the most pressing want of nature; and, at the same time, an inestimable blessing of the Deity. But, should they wait, till they lose this blessing, to become wise? No: now, while they enjoy the advantages of sleep,—and that the beginning of each night makes them feel its salutary effects, never let them give themselves up to it without a lively sense of gratitude towards their heavenly benefactor. Let this gratitude prevent them equally from making an abuse of sleep, or, by a contrary extreme, not making use of it. It is always wrong to prolong, through idleness, the hours designed for repose. Nature, in this respect, as in every thing else, is content with a little; and seven or eight hours of quiet uninterrupted sleep, is as much as is necessary. But we are not less blameable, when, through avarice, ambition, or any other motive of that sort, we lose our sleep and necessary rest. In both cases, we act contrary to the rules established by God, and contrary to the gratitude we owe him for such a blessing.

Above all things, let us endeavour to go to sleep with a proper turn of mind. What should we do, if we were to know for certainty, that, from the arms of sleep, we were to pass into those of death? Should we not employ our last moments in preparing ourselves for this passage, in

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recollecting our past life, in seeking, through the blood of Christ, the remission of our sins? Well then, we may, every night, consider this case possible. In each winter's night, that is to say, in the space of twelve or fifteen hours, there die above fifty thousand people. Who can say whose name is not in the list of those which death will remove out of this world? Now, I leave it to the decision of every one's heart, what they would have done, if, in the midst of their sleep, they had been called upon to appear before the tribunal of Jesus. If, in the course of this night, God had disposed of them, would they have been prepared to appear before him? O God, to whom all hearts are open, and from whom no secrets are hidden, what can we conceal from thee. We daily feel our weaknesses. Pardon our sins, we beseech thee, and enter not into judgment with us for them.

JAN. XXXI.

Revolutions which are constantly in Nature.

ALL the vicissitudes of nature are derived from the invariable laws established by the Creator, when he drew the universe out of nothing. For five thousand years, there has been seen in the sky, and upon the earth, at certain marked periods, the return of the same variations and the same effects. The sun, moon, and stars, continue constantly the same course once prescribed to them. But who is it that supports, that directs them? Who teaches these bodies the course they ought to take? Who points out to them the time for their revolutions? Who impowers them to move always with the same force? Who prevents them from falling on our globe, or from losing their way in the immense space of the

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heavens? All these questions lead us to God. It is he who appointed the circles they were to describe; it is he who supports, who guides, and prevents them from confusion. By laws, unknown to us, he causes those celestial bodies to move with incredible swiftness, and with such perfect regularity that nothing can disturb them. Nearer to us there are, in the elements, continual revolutions, though they are not visible to common observers. The air is in perpetual motion round our globe. The water continues its course, in the same manner, without ceasing. The rivers run into the sea; and, from its broad surface, vapours rise, which produce clouds. These fall again upon the earth, in rain, snow, and hail: they penetrate into the mountains, and fill the springs: from whence rivulets becomes rivers, when they have met, and are thereby augmented in their course. Thus the water which had fallen from the clouds, returns back into the sea. The seasons last a limited time, and succeed each other, according to the order once established. Each year, the fertile earth produces again its plants, and its harvest. Yet it is never exhausted; for, by means of the continual circulation in all the nutritive parts, whatever the earth yields is restored to it again. The winter comes at the appointed time, and brings the repose it has occasion for; and, when it has fulfilled the designs of the Creator, the spring succeeds; and this restores to the earth the children it has lost. The same circulation takes place in the body of every living creature: the blood flows continually through its several channels, distributes to each limb the nourishing juices it requires, and then returns to the heart from whence it came. All these revolutions lead us to reflect on the Supreme Being, who laid the foundation of them at the creation of the world; and who, by his power and wisdom, has continued to direct them

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to this very moment. These are reflections worthy to fill our time, and which are particularly proper at the end of this month. Under the wise direction of Providence, all the revolutions which take place in the course of the month, are produced in the manner best calculated for the designs of the Creator.

Each day the sun has cheered us; and, after having fulfilled its design, it has given place to the night. Each day the goodness of God is renewed towards us, in having made all the changes and revolutions contribute to our welfare. And now this month, with all its days, its hours, and its moments, is for ever passed away. It is impossible that the very same month should return to us, were we to live fifty winters more. However, all the wheels of the great machine, the system of the universe, will at last stop; the circular motion of the globes will cease: the springs of nature will be broken; and the days, the months, and the years, will be swallowed up in the abyss of eternity. Then, O, Eternal, Unchangeable, and Infinite Being, thou shalt still exist; and, through thee, the duration of my existence shall be eternally prolonged. God be praised, that each month which passes, while I am upon earth, draws me nearer the term when my felicity will begin.

FEBRUARY 1.

Every thing in Nature tends to the Good of Mankind.

WE cannot be too sensible of the love and preference with which we are honoured by God's distinguishing us so advantageously from other creatures. Let us feel, as we ought, the great happiness of being particularly the objects of his

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beneficent liberality; of being, in some measure, the centre of all he has produced for the manifestation of his glorious attributes. It is for us that all nature acts and labours in the earth, in the air, and in the waters. For us the horse's hoof is furnished with that horn, which it would have no occasion for, were it not to draw burdens, and to climb the mountains. For us the silk-worm spins its bag, shuts itself up in it, and afterwards leaves us this web so artfully contrived. For us the gnat lays its eggs in the water, for food to the lobsters and fish, which serve themselves for our subsistence. For us the bee gathers, from the leaves of flowers, that exquisite honey destined for our use. For us the ox is put to the plough, and desires no other reward than a little food. It is also for us that the forest, the fields, and the gardens, abound in riches, the greatest part of which would be lost, if they were not of use to us. For us also are designed the treasures the mountains contain. It is true, that we have, beyond comparison, more wants than the brute creation; but we have also many more faculties, talents, and industry, to make every thing around us serve for our use and pleasure. Millions of creatures contribute towards our food, clothes, and habitations, and furnish us with innumerable conveniencies and enjoyments. If God has created us with so many wants, it is precisely to procure us a great variety of agreeable sensations. It would be impossible for us to satisfy those multiplied wants, if animals had as many as we have; and it is in order that we should have plenty of every thing, that the things they require are generally such as mankind can make no use of. But it is not our food only that God has provided with so much goodness: he has deigned to procure us a thousand other enjoyments. It is for us that the lark and the nightingale sing; that the flowers perfume the air; that the fields and

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the gardens are adorned with so many different colours. Above all, he has given us reason, to enable us to make every thing contribute to our support and pleasure; to rule over animals; to subdue the whale and the lion; and, what is still more precious in another way, to take pleasure in his works; to contemplate the beauty, the greatness, and magnificence of them; to admire their order and harmony. O man! thou who art so endowed and so loaded with favours, how canst thou ever be grateful enough to thy heavenly Benefactor? What love can be perfect enough, to answer in any degree, to that which God has shewn unto us! To increase more and more our love and gratitude, let us frequently reflect on the unlimited liberality of the Father of nature, on the preference with which he honours us, and on the innumerable blessings we receive from him every hour. Let us often reflect, that there are no creatures upon earth so favoured as we are. Let us look around us, and contemplate all nature. Let us ask the sky, the earth, and the sea, all the animals and plants, in a word, every being that exists, and they will tell us, that we are the happy beings to whom all others are subservient, and to whom the whole creation tends. Then, let our souls be penetrated with the most lively gratitude, and the most ardent love, towards our magnificent Benefactor. And let it be our first care, our only ambition, to live for him alone, who has given life and being, on our account, to so many different creatures. These are the resolutions we ought to form in the beginning of this month. Every day we shall have fresh occasion to acknowledge and praise the paternal care of Providence. Let us taste and enjoy the divine goodness in each meal provided for us, in each glass of water that serves to quench our thirst, and to refresh us.

But, above all, let us acknowledge the mercies

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of God, in the blessings he reserves for us hereafter. It is for us that Christ designs that ineffable happiness, which his faithful disciples will enjoy about his throne. The blessed spirits will be our companions and friends; and we shall partake with them of those joys which infinitely surpass all others. What, indeed, are the blessings of this life, in comparison of the glory which awaits us in heaven? It is true, that, even here, we continually experience the effects of his benevolence, and are surrounded with the wonders of his goodness. But, in this world, all pleasures are mixed with pain, and perfect happiness can only be found in heaven.

FEB. II.

The Influence which the Cold has upon Health.

IN these severe winter months, it is very usual to hear great praises given to the other seasons of the year. The spring, the summer, and autumn, the value of which is so little felt while they are possessed, are extravagantly cried up, now that the advantages of them can no longer be enjoyed. It is thus that men are disposed. The blessings they possess, they do not value as they ought; and they do not begin to know their worth, till they are deprived of them. But, is it in fact true, that those three seasons only merit our attention and praise? Is winter, in reality, what it is generally represented, an enemy to pleasure, and destructive to health? As this prejudice may very considerably influence our peace and happiness, it would be right to reflect impartially on the advantages which the present season procures to us in respect to health.

Spring and autumn are very dangerous, on account of the sudden changes in the weather. In

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summer, the air is filled with corrupted vapours, or at least with such as are disposed to be so. It is the time we are most liable to catch colds, which occasion a multitude of painful, and sometimes fatal disorders. Winter has not these inconveniencies. The cold favours insensible perspiration, and prevents, by that means, many terrible evils produced by the suppression of it. By means of a gentle moderate perspiration, we feel lighter and easier; the blood purifies; the appetite increases, as well as the cheerfulness and serenity of the mind. The cold also braces the solids, strengthens them, and, by that means, supplies the want of exercise. What inconvenience is there not in the great heats of summer? What oppression, what weight one feels, when obliged to be long in the open air, and to bear, as one may say, the whole weight of a burning atmosphere? How do we long for the coolness of night, to revive us, and restore our strength? The fine winter days have not these inconveniencies. We have more activity, strength, and courage; are better disposed for labour or for pleasure. Cold gives us spirits, excites us to move quicker, and to take exercise, in order to put us into a gentle heat. Thus, even winter may contribute to our health and pleasure. The Creator has considered our welfare in this season, as much as in the others; and has formed the wisest plans for the preservation and happiness of his creatures, in every month of the year. If we are not equally content, and do not enjoy as good health in winter as in the other seasons, it is certainly our own fault. Perhaps some pass it in idleness. Perhaps they are always shut up in hot rooms, and never breathe a pure air, nor make use of the fine winter days. Perhaps they give way to vexation and anxious cares. Perhaps they transgress against sobriety, and are guilty of excess in eating and drinking. Perhaps, in fine, having made a bad

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use of the summer, they have ruined their health by irregularities, and now feel the bad consequences. How happy might man be, how constantly good his health, if he followed the laws of nature, and if he allowed labour and rest, business and pleasure, to take their turn regularly!

O my beneficent Creator! I acknowledge, with lively gratitude, the wise purposes thou proposest to thyself in the ordinance of the world. I bless the fatherly care with which thou providest for our preservation, peace, and welfare, through every change of the year. Can we then be imprudent enough to make a season painful and disagreeable to us, which might become the source of the purest and most innocent pleasures? Shall we, in the levity of our hearts, destroy that health and life which thou wouldst preserve with so much goodness? No, let us rather endeavour constantly to answer thy wise and beneficent views. Content of mind and cheerfulness will then make our days agreeable. Temperance and virtue will best insure a firm and lasting state of health.

FEB. III.

A Temperature always the same would not be good for the Earth.

WE imagine that our earth would be a paradise, if, every where, or in every climate, there was an equal distribution of heat and cold, the same fertility, and the same division of day and night. It is thus we, poor, short-sighted, selfish mortals, think. But, suppose things were so ordered, and that, in every part of the globe, there was the same degree of heat and cold, is it certain that mankind would gain by it, in respect to food, convenience, or pleasure? So far from

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it, that, on the contrary, the earth would be the saddest and most miserable place to live in, if God had followed the plan we would prescribe to him. By the present plan, there is an infinite variety in the works of the Creator. What dull uniformity it would occasion; what beauty, and how many charms would the earth be deprived of, if the revolutions of seasons, of light and darkness, of heat and cold, were not to take place? Millions of plants and animals (which can only live in countries of a certain degree of heat), could not exist.

Among this immense multitude of natural productions, there are very few which can thrive equally in most climates. Most creatures found in these cold countries, would be unable to bear the hot climates; while, on the other hand, those are peopled with beings who would perish in cold countries. If, then, there was every where an equal heat, a number of natural productions would not exist. Nature would be deprived of great part of her charms, with her variety; and many blessings would be thrown away upon us. If every country produced the same things, and had the same advantages, all communication between the different nations would cease; there would be no intercourse nor commerce. Several arts and trades would be unknown. What would become of the sciences also, if the mutual wants of different nations did not put them to the happy necessity of communicating them to each other? Suppose, nevertheless, that there was to be an equal degree of heat over the whole world, could we determine what that degree ought to be? Ought it to be every where as hot as in the torrid zone? Who could bear such a climate? For the colder regions always taking away part of the heat from the hot countries, the heat which must then be spread all over the earth, would be much greater than that of the torrid zone is at present;

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men, animals, and plants, would be all consumed, and would all perish. But, suppose that there was over the whole earth that temperate heat which would suit all creatures, the air also must every where be of equal height, density, and spring. From whence, it would follow, that our earth would be deprived of one of the principal causes of the winds, the want of which would occasion mischief scarcely to be expressed. Air, which is so essential to the preservation of life, would become the worst of poisons, if it was not purified by the winds. Equality of heat over the whole earth, would soon produce sickness, plagues, contagion: Our fancied paradise would no longer be any thing but a desert, and a real chaos.

Wise and Beneficent Creator, all that Thou hast done is right. This confession is the result of every reflection I make on the contemplation of thy works. I wish to accustom myself to think thus at the sight of every object of nature; and if it should happen that I thought I discovered faults, or imperfections, I would always recollect thy infinite wisdom, and the weakness of my understanding. Many things, which at first sight appear useless, and contrary to the order of the world, are arranged with admirable goodness and wisdom. What appears to me defective and imperfect, gives, to more enlightened minds, just reason to admire and praise the perfection of the Creator; and, supposing I should not always be sensible of the wisdom and goodness of God, in the creation and preservation of the world, it ought always to be enough for me to know, that whatever God does is right.

Such is also the judgment I shall hereafter form of the moral government of God, and his conduct towards intelligent beings. As, in nature, he has distributed, in unequal degrees, heat and cold, light and darkness, so he has made great difference

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in his dispensations towards rational creatures, and has not regulated their fate all alike. But in this, as well as in nature, his ways are still ways of wisdom and goodness. In the same manner, as our globe could not subsist, if there was an equal degree of heat and cold every where; so it is also certain, that the happiness of the world would be destroyed, if there was a perfect equality in the lot of mankind. All that God has planned and ordered, is admirable and perfect. All his paths are mercy and truth to those who keep his covenant. To him be glory for ever and ever.

FEB. IV.

The Use of Stars.

THE starry sky is an admirable scene of the wonders of the Most High, in the eyes of every one who loves to reflect on the works of God. The order, the greatness, the multitude, and the brilliant splendour of those heavenly bodies, must be the most pleasing spectacle to an attentive observer of the works of nature. The sight of the stars alone, supposing that we knew nothing of their nature and use, would be sufficient to fill the mind with admiration and delight. For what can be seen more magnificent and beautiful than that immense expanse of the heavens illuminated by numberless lights, which the azure sky makes appear still more brilliant; and which all differ from one another both in size and lustre. But, would a being, infinitely wise, have adorned the celestial vault with so many bodies of an immense size, merely to please our eyes, and to afford us a magnificent sight? Would he have created innumerable suns, merely that the inhabitants of our little globe might have the plea-

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sure of seeing in the sky some luminous specks, the particular nature and purpose of which they very imperfectly know, and which are even but seldom observed? Such an idea cannot be formed by any body, who considers that there is, throughout all nature, an admirable harmony between the works of God and the purposes he designs them for; and that in all he does, he has in view the advantage, as well as the pleasure of his creatures. It cannot be doubted, but that God, in placing the stars in the sky, has had much higher views than that of affording us an agreeable sight. Indeed we cannot precisely determine all the particular ends the stars may answer; but, at least, it is easy to believe that they must be designed for the advantage as well as the ornament of the world; and the following considerations will be sufficient to convince us of it. Among the stars that are easiest to distinguish, there are some which we see constantly in the same part of the sky, and are always over our heads. These serve to guide travellers by sea and land in the darkness of night. They point out the way to the navigator, and tell him when he may undertake his voyages with least danger. Other stars vary their aspect; and though they always hold the same situation, as to one another, they change the order of their rising and setting in respect to us, from day to day. Even these changes, which never vary in their regularity, are of great use to us; they serve to measure time, and to determine it by settled rules. The regular revolutions of the stars mark precisely the return and the end of the season. The ploughman knows exactly, by this means, when he ought to sow seeds in the earth, and the whole progress of the country labours. However considerable the use of the stars is to our earth, it may well be presumed, that it is not the only, nor the most important object,

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which God proposed to himself, in producing so many globes of a prodigious size. Can it indeed be supposed, that the wise Creator strewed the immense expanse with so many millions of worlds and suns, merely that the small number which inhabit the earth should be informed of the measure of time, and the return of the seasons? Undoubtedly these innumerable globes are for more sublime purposes; and each of them has its particular destination. All the stars being so many suns, which can give light, animation, and heat, to other globes, is it probable that God should have given them that faculty for no purpose? Would he have created stars, whose rays can pierce even to the earth, without having produced worlds also to enjoy their benign influence? God, who hath peopled this earth, which is a mere speck, with so many living creatures, would he have placed, in the immense space, so many desert globes? No, certainly: perhaps each of these fixed stars, which we see by myriads, has its worlds moving round it, for which it has been created. Perhaps, these spheres which we see above us, serve as abodes for different sorts of creatures; and are peopled, like our earth, with inhabitants who admire and praise the magnificence of the works of God. Perhaps, from all these globes, as well as from ours, there rises continually towards the Creator, prayers and hymns of praise and thanksgiving. It is true that these are only probable conjectures; yet, to every true lover of God, these conjectures must be most agreeable and most delightful. How sublime is this thought, that exclusive of the small number of rational creatures which inhabit this globe, there are innumerable numbers of them in those worlds which appear from hence to be but mere luminous specks. It must be indeed out of the question, that the empire of the Most High should not be beyond the limits of

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our earth. Beyond this world there is an immensity, in comparison of which our globe, large as it is, can be but reckoned as nothing. Souls without number exist there. All of them magnify the name of our great Creator; and are all as happy as their destination admits of; and perhaps aspire to a better world.

FEB. V.

The wonderful make of the Eye.

THE eye infinitely surpasses all the works of the industry of man. Its formation is the most astonishing thing the human understanding has been able to acquire a perfect knowledge of. The most skilful artist could imagine no machine of that kind, which would not be much inferior to what we observe in the eye. Whatever sagacity or industry he might have, he could execute nothing which would not have the imperfections necessarily belonging to all the works of man. We cannot, it is true, perceive clearly the whole art of Divine Wisdom in the formation of this fine organ; but the little we do know is sufficient to convince us of the infinite knowledge, goodness, and power of our Creator. The most essential point is for us to make use of this knowledge, weak as it is, to magnify the name of the Most High.

In the first place, the disposition of the external parts of the eye is admirable. With what intrenchment, what defence, the Creator has provided our eyes! They are placed in the head, at a certain depth, and surrounded with hard and solid bones, that they may not easily be hurt. The eye-brows contribute also very much to the safety and preservation of this organ. Those hairs which form an arch over the eyes, prevent

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drops of sweat, dust, or such things, falling from the forehead into them. The eye-lids are another security; and also, by closing in our sleep, they prevent the light from disturbing our rest. The eye-lashes still add to the perfection of the eyes. They save us from a too strong light, which might offend us; and they guard us from the smallest dust, which might otherwise hurt the sight. The internal make of the eye is still more admirable. The whole eye is composed of coats, of humours, of muscles, and veins. The tunica, or exterior membrane, which is called *cornea*, is transparent, and so hard, that it can resist the roughest shocks. Behind that there is another within, which they call *uvea*, and which is circular and coloured. In the middle of it there is an opening, which is called the *pupil*, and which appears black. Behind this opening is the *crystal*, which is perfectly transparent; of a lenticular figure, and composed of several little flakes, very thin, and arranged one over the other. Underneath the crystal there is a moist and transparent substance, which they call the *vitreous humour*, because it resembles melted glass. The cavity, or the hinder chamber, between the cornea and the crystal, contains a moist humour, and liquid as water, for that reason called the *watery humour*. It can recruit itself when it has run out from a wound of the cornea. Six muscles, admirably well placed, move the eye on all sides, raise it, lower it, turn it to the right or left, obliquely, or round about, as occasion requires. What is most admirable is the *retina*, a membrane which lines the inside bottom of the eye. It is nothing but a web of little fibres, extremely fine, fastened to a nerve or sinew which comes from the brain, and is called the *optic nerve*. It is in the retina that the vision is formed, because the objects paint themselves at the bottom of the eye on that tunica: and though the images of exterior ob-

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jects are painted upside down on the retina, they are still seen in their true position. Now, in order to form an idea of the extreme minuteness of this picture, we need only consider, that the space of half a mile, that is to say, of more than eleven hundred yards, when it is represented in the bottom of the eye, makes but the tenth part of an inch.

I return thee thanks, O Lord God, for having formed my eye in so wonderful a manner. My soul acknowledges thy infinite power, goodness, and wisdom. Hitherto I have not considered my eyes as I should have done, that is, as a masterpiece of thy hands, and as a demonstrative proof, that even the most minute parts of my body are not the work of chance, and that Thou hast formed them for most useful purposes. But I begin to see a little the wonders of thy wisdom; and I am struck with astonishment, in reflecting on myself and all the works that Thou hast done. O wise and Almighty Creator! pardon me, if hitherto, in making use of my eyes, I have not thought of Thee, or if I have not thought of Thee with the highest gratitude. Dispose me thyself, to remember thy blessings with more gratitude. Teach me to use them only for the purposes thou designest them, and never to profane or dishonour these fine organs by any fault of mine. Grant that hereafter I may often employ them in examining thy works; and that every time I contemplate either the heavens or the earth, or myself, I may be induced to praise and bless thy wonderful goodness. And when I see the many evils and miseries of great part of my fellow-creatures, let not my eyes refuse them tears, nor my heart be shut to compassion. Thus shall I fulfil the views of thy goodness, and make myself worthy thy approbation.

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FEB. VI.

On Fogs.

AMONGST the many meteors seen in winter, one of these which merits particular attention is the fog. It is a heap of watery and sulphureous vapours, which fill the lower region of the air, and thicken there. This condensation is principally occasioned by cold; and, in order to form fogs, the air must be sensibly colder than the earth, from whence there arises continual exhalation. Besides, that the fogs shed on the earth a gentle moisture, they afford us a very agreeable sight. All that we see, far or near, the sky or earth, appears confusedly wrapped up in a grey curtain. All around us, and over our heads, we see nothing but darkness; and the eye wanders every where without being able to distinguish objects. The rising sun labours a long time to pierce through these fogs, and to restore the earth to its former appearance. It succeeds at last in dissipating these vapours. Sometimes they light upon the earth, and sometimes they rise into the middle region of the air. By degrees, the objects rise out of that obscurity, and appear again in their usual state. The sky resumes all its brightness, all its serenity; and it is only near the ground, or on the roofs of houses, that any traces remain of the fog which had for several hours covered the horizon. At the sight of this meteor, I recollect those unhappy times, when the sciences were in a manner wrapped up in an impenetrable mist of superstition and ignorance. In what thick darkness whole provinces and kingdoms were plunged before the sun of truth could shew itself in all its splendour? The human understanding was so limited and short-

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sighted, that it scarce comprehended the things which immediately surrounded it; and the power of error was such, that no ray of light could penetrate into those souls, darkened by prejudice and superstition. In fine, the sun appeared again, and suddenly enlightened countries, which, during whole ages, had been buried in thick shades. We learned to distinguish error from truth. A happy futurity, eternity itself was opened to us, and we began to feel the greatness of our lot. Blessed Luther! this is what thou hast done, through the grace and assistance of God. Thy memory will ever be blessed among us, and thy remembrance will even be most dear.

It is however but too true, that, as long as I remain here, during the days of my earthly pilgrimage, I shall still walk in darkness. The mist which surrounds me does not permit me to have a clear and distinct view of futurity. My ignorance, my prejudice, my credulity, still increase the darkness of my present state. O may they soon be dissipated! May the light of truth and joy enlighten me in this vale of darkness! But, thanks to God, a way is open to me, and I see, through the shades which surround me, the path that leads to a blessed eternity. Every cloud will soon vanish, and I shall be transported to a scene of light and felicity, which no shade will ever darken. There I shall know, by the light of heaven, what had appeared on earth dark and gloomy. There I shall feel the wisdom and holiness of those ways of Providence, which were here incomprehensible to me. There my soul, penetrated with admiration and gratitude, shall behold the wonderful chain and perfect harmony in the works of the Most High.

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FEB. VII.

The Flux and Reflux of the Sea.

THE greatest part of the surface of the earth is covered with water, which is called the Sea; and that immense heap is very distinct from lakes and rivers. These contain more or less water, according to the different seasons; whereas, in the sea, the quantity of water is almost always the same; but, we observe the sea increase and decrease twice every day, according to certain rules. When it comes to a certain height in a port, it soon begins to decrease: this decrease continues for six hours, and the sea is then at the lowest ebb. At the end of six hours, it begins again to rise, and this increase also lasts six hours; at the end of which, the sea has again attained its greatest height. Then it sinks again for six hours, to swell again for the same time; so that, in the space of twenty-four hours, the sea twice rises and falls, and is alternately at the highest and lowest ebb. This regular and alternate motion of the sea, which rises towards the shore, and withdraws again, is called the flux and reflux. When the sea swells and rises towards the coasts, it is called the flux: and the motion which forces the water towards the main is called the reflux. It is a remarkable circumstance, that the tide is regulated according to the course of the moon. The flux is greater, and rises higher towards the time of the new and full moon, and is lower during the quarters. The motion of it is also much more considerable in spring and autumn than in the other seasons. On the contrary, the tides are much weaker during the solstices. This phenomenon is particularly observable in the ocean, where the water

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fills a great space; and is much less so in limited seas, such as the Mediterranean. Finally, the interval between the flux and reflux is not exactly six hours: it is eleven minutes more, so that these revolutions do not happen the next day, at the same moment, but three quarters of an hour later. They do not return at the same hour till the end of thirty days, which is exactly the time from one new moon to another. What may be concluded on, with certainty, from this constant and regular phenomenon, is, that the flux and reflux have some connection with the motions of the moon. But, without searching deeper into the cause of this effect, in which there is still much obscurity; without deciding whether the flux and reflux are owing to the pressure of the moon on the waters, or the gravitation of the particles of the earth towards the moon, let us rather reflect on the views God proposes in these remarkable revolutions. It is always a pardonable ignorance, not to be able to explain perfectly the laws and the course of nature; but it is an inexcusable want of attention and gratitude, not to reflect on the happy effect those laws, and those great phenomena, have upon our earth, or to forget what we owe to the beneficent Father of nature. The first advantage we have from the flux, is the sending back the waters into the rivers, and making them deep enough to be able to convey, to the very gates of great cities, burdens and merchandise, the carriage of which would otherwise be impracticable. The ships wait sometimes the increase of water, to take advantage of it to get into the road, without touching the bottom, to enter the channel without danger. After this important service, the tides fall, and leaving the river to return to its shores, they facilitate the enjoyment of commodities to the inhabitants. Another advantage we have from this perpetual waving of the waters is, to prevent it from stag-

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nating, or corrupting, by lying still. It is true, that the wind also contributes to it, but, as there is often a perfect calm in water, there might result from it a putrefaction in the bason of the sea, which is the reservoir for all the waters of the earth to flow into. God has, therefore, ordered the flux and reflux, to prevent hurtful things settling there. The motion of the water, rising and falling, attenuates and separates those corrupted vapours; and, in order to preserve the sea in its purity, the flux and reflux mixes and disperses the salt, of which it is full, and which would otherwise sink quickly to the bottom.

These reflections may naturally remind us of a circumstance which is much connected with this phenomenon: our life is but a flux and reflux. It increases and decreases: every thing is inconstant and liable to change. Nothing is durable. There is no permanent joy, hope, or happiness. We swim in a rapid and inconstant river: let us then take care not to be drawn into the abyss; and let us endeavour to gain the happy port, the smiling and cheerful shores. On the other hand, let us bless God, that our evils and anxieties are of short duration. An excessive and lasting grief, or pain, is as little compatible with our nature, as a constant and perfect happiness. These changes are certainly an advantage to us. If we enjoyed, through the whole course of our lives, an uninterrupted felicity, we might easily grow proud, and forget God. As, on the other hand, a continual train of disgraces and misfortunes would sink us entirely, and harden our hearts. Let us then bless our heavenly Father for his wise decrees, and endeavour to conduct ourselves, through every event of life, in prosperity and adversity, in a manner worthy our faith, and the hope of everlasting life.

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FEB. VIII.

The Sun does not always appear.

CLOUDS of rain and snow do not always cover the sky. The clouds sometimes disperse, after having spread over the earth the great provision of water they had collected. Then, the most agreeable serenity appears in the sky. The sight of the sun, which dark clouds had deprived us of for some days, revives every creature, and fills them with joy and animation. During summer, we are accustomed to the presence of this beautiful light; but, as it seldom appears in winter, and then only for a few hours, we learn to value it the more. Is not this a remark we may make, in regard to every other gift of God? Is it not true, that we are but little sensible of the blessings of this life, and that we look on them often with indifference, when in our possession? Health, repose, friendship, an easy income, and a thousand other blessings, which we daily enjoy, do not appear to us as great as they really are; and we often continue insensible of their value, till we have lost them. We must be on a sick-bed, deserted by our friends, in want and poverty, before we fully feel the happiness of enjoying good health, of having a faithful friend, and the means of subsisting comfortably.

When the sun brightens up, after having long been darkened with clouds, the earth still looks dismal. It is true, that it is a little improved by its rays, but it is not sufficient to restore it to all its beauty. The sun has not yet sufficient power to conquer the cold, which has hardened the earth, nor to revive nature, which appears dead. It is like the light of the mind, which does not always warm the heart. Those who languish in misery

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and affliction feel this. It happens sometimes, that in the winter of life, or in other sad and unhappy circumstances, we see joy and pleasure at a distance, without being able to taste the fruits of them. We owe, however, thanksgivings to our heavenly Benefactor, for those gleams of joy, which now and then refresh our souls, and soften our cares and sorrows, were it but for a few moments. I limit myself, O God, to this one favour, which I beg of thee,—If it is thy will that some of my latter days should be sad and gloomy, I will not murmur at it, I will not lose courage; grant only that my soul may be now and then revived with some rays of joy, and that I may have a distant view of a happy futurity. All that I dare ask, is some moments of ease and comfort; they will enable me to support, with courage, the cloudy days of adversity. How uncertain is the serenity of the sky in winter: how little can we depend on the beneficent rays of the sun! It appears now with mild majesty, but it will soon be covered with clouds; and, before noon, the splendour and beauty with which it enlivened the earth this morn, will all disappear. Such is also the uncertainty of every scene through life. We can never promise ourselves lasting or uninterrupted happiness. It ought to make us wise and prudent in the days of prosperity, and moderate our love of earthly enjoyments. Every thing is liable to change. Virtue only is unchangeable. That alone can enable us to support the vicissitudes and distresses of this world, and give us fortitude to bear adversity or prosperity, till it lead us to those blest regions where we shall be perfectly happy, without a shadow of variation or change.

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FEB. IX.

Earthquakes.

OUR earth suffers two kinds of shocks; one is occasioned by the action of subterraneous fires, and by the explosion of volcanos. These commotions are only felt at small distances, and only when the volcanos work just before the entire eruption. As soon as the matter which forms the subterraneous fires comes to ferment and blaze, the fire makes an effort on all sides; and if it does not naturally find a vent, it raises the earth, and makes itself a passage, by throwing it up with violence. But earthquakes of this kind only extend for the space of a few miles. They shake the earth like the explosion of a magazine of powder, which produces a shock, and a sensible commotion at several leagues distance. But there is another sort of earthquake very different in the effect, and perhaps in the cause also; I mean those terrible earthquakes which are felt at great distances; and which shake a long tract of ground, without any new volcano, or any eruption appearing. There are instances of earthquakes, which have been felt at the same time in England, France, and Germany. These extend much more in length than in breadth. They shake a chain or zone of land, with more or less violence in different parts; and they are generally attended with a hollow noise, like a heavy carriage going very rapidly. The following observations may explain the causes of this sort of earthquake: all inflammable matter capable of explosion produces (as powder does) a great quantity of air. The air produced by fire is so very much rarified, that it must cause very violent effects, when it has long been shut up and

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compressed in the bowels of the earth. Suppose, then, that at a very considerable depth, such as an hundred or two fathoms deep, there should be sulphureous matter which should take fire, by means of the air, it must of course seek a vent; and, if it finds none, it occasions the most violent shocks. It is impossible to express how fatally dreadful earthquakes of this kind are. Of all the desolations, of all the catastrophes upon earth, there are none so formidable, so destructive, and which so much baffle all human foresight and prudence, as these earthquakes. When rivers overflow their banks, swallow up provinces, and sweep away whole villages, there is still some resource; it is possible to escape to the mountains, or upon the upper parts of houses. Dikes may stop the fury of the waves. But that is impossible or useless in earthquakes. There is scarce any other danger from which one may not escape. Lightning never consumed whole towns and provinces. The plague, it is true, may unpeople the greatest cities; but it does not entirely destroy them; whereas the calamity we speak of extends itself with an irresistible power over a whole country, and swallows up whole kingdoms and people, without leaving the smallest trace behind.

Lord God Almighty, who can stand before thee, when thou displayest thy power! Who can resist thee, when thou risest to judge the nations! The earth trembles before thee, and is shaken. The foundations of the mountains are troubled, and quake, when thy anger is kindled. The mountains tremble, and the hillocks vanish. The earth quakes at thy presence, the habitable earth, I say, and all who inhabit it. Thy anger spreads like fire, and the rocks are split asunder before thee. Who would not fear thee, O Ruler of the earth! Yes, Lord, we acknowledge and adore thy sovereign majesty. Thy judgments are incomprehensible; but, at the same time, thou art good

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and merciful in all thy dispensations. O my soul, endeavour to be well convinced of this great truth; whenever the Lord displays his judgments upon earth; when he consumes whole countries in the height of his anger; even then his ways are ways of wisdom and goodness. Can we imagine that it is to destroy us, that he orders those frightful shocks? We, whom a breath of wind could destroy, can we think that the Most High has occasion to make use of the elements, and of all the strength of nature, to reduce us to death? Let us rather acknowledge higher views in these terrible catastrophes. The earthquakes themselves serve, in the Creator's plan, towards the general preservation. And suppose that villages, towns, provinces, were buried in their ruins; suppose that many millions of creatures were destroyed, what are 10,000 provinces, what are 100,000 creatures, in comparison of that innumerable number of beings who fill the whole of the created universe? Let us be convinced that every thing frightful or terrible in nature, all the apparent evil, all the imperfections of the world, are necessary for the preservation of the whole; and from thence, even for the manifestation of the glory of God.

Great and Almighty Being! I will therefore adore and bless thy name, even when Thou sendest thy plagues, and scatterest terror and desolation on the earth. I will do more. I will rest with sure confidence upon thy fatherly care. Though even the world should be destroyed, though the mountains should fall, and sink into the sea, Thou shouldst still be my support, my strength, and my refuge. Thou wilt ever be my help and my protector in all evils. Let me only possess a good conscience, and I shall find nothing in nature terrible, though every thing should shake around me. Let the earth open under my feet, let the whole world be crushed, I shall say, with security, God is my rock and

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my defence; his mighty hand will ever support me.

FEB. X.

The Order established by God in regard to the Life and Death of Man.

GOD observes the most exact and wonderful order in regard to our life and death. Both depend so little on a blind chance, that, on the contrary, all is regulated and measured in the wisest manner. If we make our calculation of a certain period of years, we shall find that there dies a proportionable number of men at every age of life.—At thirty-five or thirty-six there dies but one every year. On the other hand, there are annually more in proportion born than die; so that, if there die ten, we may always reckon that there are twelve born. Besides this, God shews a particular wisdom in regard to the several ages of those who die. In the first years, out of three or four children, there generally dies one. At five years old, one out of twenty-five; at seven, one out of fifty; at ten, one out of an hundred; at fourteen and fifteen, one out of two hundred. At twenty years old, it is pretty equal to fifteen. After twenty-five, mortality begins again to increase. At thirty, there dies one out of an hundred; at thirty-five, one out of fifty, &c. In how strong a light does God manifest, on this occasion, his wisdom and goodness, by sparing younger people the most! And in what admirable proportion he takes them out of the world!—Amongst a thousand who die, there is every where a pretty equal number of young people of twenty years old, of fifty, of sixty, and eighty years of age. It is true, that the manner of life that men lead; their vices, wars, and epidemical disorders, may carry off more some years than others. But, even here,

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Providence has taken care to set bounds to mortality in the following years, and to contrive that the loss which mankind had suffered should be amply repaired. Let us add to this, that every season of the year is not equally dangerous to mankind. Spring carries off the greatest number; and the beautiful month of May, wherein all nature seems to revive, is more destructive than March or April. But as soon as the heats increase with the month of June, disorders sensibly diminish. Summer and autumn are more favourable to health than winter.

Let us admire the providence of God, and his tender care for our preservation; even to the lowest beggar, and the child at the breast, has he numbered their days and years. How tranquil ought we to be, since our births, as well as our deaths, are so exactly determined; and how easy should it be to conquer any excessive fear of death! God has undoubtedly set limits to our lives, in the way most advantageous to us. If we enjoy the comfortable security of having found grace in the sight of God through Jesus Christ, we may be certain that we shall not be taken out of the world till we are ripe for eternity, and till the Lord has brought us to the degree of piety designed for us. Seduced by self-love, we often fancy, at the approach of death, that God treats us with great severity in calling us so soon out of this world; but let us be persuaded, that however premature our death may appear to us, it happens at the properest time, both for us and the rest of mankind. Let us not, however, presume (from this wise ordination of God in regard to our lives), upon a certain number of years. It is true, that fewer people die at fifteen than at three years old: but if, in a place where the population is not great, there die annually but five young people, how can we be sure that we shall not be of the number: or, if we pass our fifteenth year,

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that we shall not be carried off the next. Ought it not rather to animate us to finish the work appointed us, in the years we are likely to live? since it is uncertain whether those, wherein the mortality is generally greater, should not be fatal to us. Let us not be mad enough to flatter ourselves with a long life. Death makes its greatest ravages in the years of our greatest strength; that is to say, between forty and sixty-five years of age: and it is when we think we have formed the wisest plans for living long and happily, that death comes suddenly in the midst of our hopes and projects. How wise, therefore, would it be to prepare betimes for that death which may every day surprise us! God, in his wisdom has ordained that there should die upon this earth about 30,000 people every day; and how likely are each of us to be of that number! How important is it, then, to think daily upon death, and to be well prepared for it! Let it be our chief employment: and then let it come when it may, it will find us watchful; and we may, even in our last moments, bless God, and our great Redeemer.

FEB. XI.

Reflections on Ice.

WATER, when condensed by cold, loses insensibly its fluidity, and changes by degrees, as the cold increases, into a solid body, called *ice*. This change, which at this season happens every day, deserves to be examined closely. At least, it is proper to learn some of the phenomena discovered in frozen waters. Ice is a lighter body than water; for, when frozen water is put into a temperate heat, so that it loosens from the sides of the vessel, the ice always swims at the top; whereas, if it was heavier, it must necessarily

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sink to the bottom. What makes it lighter, is the increase of its size; for, though it becomes at first more compact by cold, it dilates much when it becomes ice. This dilatation forms with so much violence, that ice can burst a copper globe of such a thickness, as would require a force for that purpose of 28,000 pounds. When the crust of ice forms itself at the top of the water, the ice is still entirely transparent, but when it thickens, it becomes opaque. This darkness proceeds from the bubbles of air, more or less, which meet in the ice, and occasion a more frequent refraction of rays. Ice continually exhales many vapours, even in the severest cold. It has been found, by repeated experiments, that, in the sharpest cold, four pounds of ice lose by evaporation a whole pound of their weight in eighteen days; and that a piece of ice, weighing four ounces, becomes four grains lighter in the space of 24 hours. Ice generally begins at the top of the water. It is an error to imagine that it forms first at the bottom, and afterwards rises to the top: for the cold, which forms the ice, proceeding from the atmosphere, cannot take effect at the bottom of the water, without having first frozen all the upper part of it. The manner in which ice is formed is equally remarkable. It is in this way: when it freezes slowly, one sees a multitude of little strings come from the sides, within the glass, and take different directions, making all sorts of angles, and uniting again, they form at the top of the water a coat of very thin ice. To these first threads others succeed, which multiply and enlarge into the form of flakes; which, still increasing in size and number, unite with the first coat. By degrees, as the ice thickens, a multitude of bubbles appear, and the colder it grows, the larger the bubbles become: from whence it happens, that the transparency of the ice diminishes, particularly towards the middle; and

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then it begins to dilate with violence, and swell into a greater size. When the cold is very sharp, and it freezes hard, there forms on the surface of the water a thin membrane, which, quitting the sides of the glass, extends towards the middle. Under this membrane there come others, which appear in triangular shapes, the basis of which is at the sides of the glass, while the sharpest angles go towards the middle. It is thus that the crust of ice thickens, becomes opaque by the bubbles of air it contains, and, by dilating, becomes more and more light.

But after having reflected on these phenomena, is it not natural to say to one's self, What order, what harmony, reign even in the least works of nature! With what weight and measure is all regulated according to the times and seasons! How does every thing in nature concur to fulfil the designs of God! How great will our admiration be, when we have a more perfect and distinct knowledge of all his wise purposes.

FEB. XII.

The Spherical Form of our Earth.

PEOPLE generally fancy the earth an even plain, a round, flat surface: but, if that was the case, the exterior limits of this surface would be found out; and, in approaching any place, it would be impossible to see the tops of towers and mountains before the lower parts of them. The earth then must be a globe; but it is not exactly and strictly spherical, for it is a little more raised under the line, and flatter towards the poles, nearly resembling an orange. But that deviation from a circular form is very inconsiderable, at the most only ten German miles, which is scarce perceptible in a globe whose cir-

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cumference is 5400 German miles, and the diameter 1720. There will be no doubt of the form of the earth being nearly spherical, if we consider that, in the eclipses of the moon, the shadow which the earth casts on that planet is always round. Besides, if the earth was not round, how could they have sailed round it, or how should the stars rise and set sooner in the eastern than in the western countries? Here, again, is the wisdom of the Creator manifest. The form he has given to the earth is the most proper and convenient for a world like ours, and for its inhabitants. Light and heat, so necessary for the preservation of creatures, are, by this means, equally and uniformly distributed over the whole earth. From thence also proceed the daily and annual returns of night and day, heat and cold, wet and dry, so constant and regular. The water, in the first place, is equally distributed over the globe, and the salutary use of the winds is felt over every part of the earth. We should be deprived of all those advantages, if our earth had any other form. In some countries, it would be a paradise, in others a chaos; one part of it would be swallowed up in water, the other burnt up with the heat of the sun. In certain countries, they would be exposed to furious tempests, which would destroy every thing, while they would be stifled in other places by the want of air, the current of which would be nearly stopped. One part of the earth would enjoy the benign influence of the sun, while the other would be frozen with cold. What pride and ignorance should we not betray, if we did not acknowledge in this the hand of an almighty and benevolent Creator? Should we deserve to inhabit a world, where all is so wisely ordained, if, like the brutes, we are insensible to this admirable plan, and to the numberless blessings which accrue from it? No, my God, and my Creator! let us never be guilty of such

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monstrous ingratitude. Let us adore thy wisdom: our weakness permits no more. He will vouchsafe to accept with goodness our humble attempts to glorify him, our knowledge, however limited, our thanksgiving, imperfect indeed, yet sincere.

FEB. XIII.

On the short Duration of Snow.

WE see the instability of snow, and how suddenly the heat of the sun, mild and damp air, or heavy rains, make it disappear. Every thing around us changes its appearance in a few hours; and there scarce remains the least trace of that snow which had covered the streets, villages, and fields.

Is not this sudden revolution calculated to make us reflect on the uncertainty and vanity of all earthly goods? Undoubtedly it is not without design that nature presents us with such images of the frailty of worldly things. In every season, in every variation that their return occasions, nature tells us, with a strong and persuasive voice, this great truth, All is vanity. Let us look around us; do we see any thing that is not frail and perishable? How soon are we deprived of the pleasures of the senses! They disappear when we have scarce begun to enjoy them. We are often at sun rise cheerful and content; and before it sets, we are plunged into sorrow and distress.

Has not every body experienced, in the course of their life, how uncertain and transient the enjoyments here are? The riches of which we are so proud, make themselves wings and fly away, like an eagle, from the possessor, when he flattered himself most with a peaceable and uninterrupted enjoyment of them. The step from the

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greatest opulence to want and misery is often as sudden as the coming of a thaw after the severest cold. We might be contented with this, if our life and health even were not as transitory as all other sublunary things.

It is too true, however, that these sorts of reflections seldom occur to us, while we are in possession of earthly enjoyments. We are like those who, in a fine winter's morn, venture to go abroad, and set out without thinking of the sudden changes of weather, so frequent at that season. When fortune smiles upon us, and we are in the midst of joy and pleasure, we think we have nothing to fear; and we do not consider how suddenly the happiest situation may be changed into misery. And, supposing we have not hitherto had an opportunity of making this sad experiment, it is certain, at least, that a time will come, when we shall be convinced by ourselves of the nothingness and frailty of every thing here. To those who are at present in the spring or summer of life, winter will soon come; and they will then experience how transient those enjoyments are, on which they have depended with so much confidence. They will learn, that all earthly pleasures are like snow, which dazzles the eye indeed, but soon melts, and is no more.

Snow affords us another very important reflection. It reminds us of our weakness and want of power: what could all the industry, and all the force of man do, were they to undertake to remove the ice and snow from the ground? God works this change with infinite ease: he bids the wind blow, and it thaws. Now, has not this God, who does such great things in nature, the same power in the world of spirits, and in the ordering of our destiny? He has but to speak the word and our troubles cease.

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FEB. XIV.

A short History of the Creation.

THERE has been a time, when our earth and the celestial globes did not exist. God willed that they should be; and his almighty will produced the heavens and the earth. All was still a shapeless and confused mass, commonly called a chaos. In the first day of the Creation, God gave motion to this mass, and separated the fiery and luminous parts. These particles joined together, and separated from the rest of matter, without, however, yet forming particular bodies. God called the light Day, and the darkness Night. Hitherto the fluid and solid bodies were still mixed together. God separated them. He collected the waters from our atmosphere; he caused vapours to arise from the earth, which, growing thick, became clouds, and formed that lower firmament we call Sky. These were the works of God the second day. The waters still covered the face of the earth. God destined the third day for the separation of them. The waters gathered together, in different reservoirs, while, on the other dry part, there appeared mountains, meadows, fields, valleys, forests, &c. Each tree and plant already bore its fruits, and all those vegetables contained the necessary seed for the propagation of their species. On the fourth day God formed from that mass of light, which on the first day had been separated from the darkness, luminous bodies, to distinguish day from night, and to regulate the seasons of the year. Then appeared the sun, whose beneficent heat warms the earth, and makes it fruitful, and also lights us in the daytime. As for the moon, it was formed out of the dark matter of the chaos. Till then, God had

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produced upon the earth nothing but inanimate beings. The fifth day was employed in giving existence to a part of the living creatures. God filled the waters with fish of different sorts and sizes, and he gave them bodies analogous to the element in which they were to live. He peopled the air with all sorts of birds; and impressed upon these beings the instinct of perpetuating their kind, to fill the air and the waters. There remained nothing more than to cover the earth also with living creatures, and God created them on the sixth day. He drew from the earth a multitude of wild and domestic animals, to serve as well for tillage, as for the food and support of man. Finally, he produced an infinite multitude of insects and reptiles. These animals, when God created them, were arrived at perfection. Every thing being thus prepared, the time was come for introducing man into the world, who was to be the lord of all these creatures. God then created the first man; and, as he belonged both to the intellectual and corporeal world, he gave him not only a body formed out of the earth, but also a reasonable soul. From out of Adams's side he took woman, and presented her to him as his companion. These two beings, by which God terminated his works of the creation, were the most admirable master-pieces of his power and wisdom.

Is it possible to reflect on this history, without being struck with admiration and astonishment, at the infinite power and wisdom manifested in the works of the creation? On whatever side we cast our eyes over this great stage, we every where discover the Lord God Almighty, to whose immense power nothing is comparable. The heavens declare his glory, and the firmament sheweth his handy-work. All the creatures are so many proofs of his adorable perfections. They are the impression and image of them. It is only by con-

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sidering creatures in this point of view, and drawing this use from the contemplation of them, that we become worthy to inhabit this immense universe. Can we possibly acknowledge the greatness and glory of God, in the works of creation, without being touched and penetrated with the most lively sentiments of veneration, love, gratitude, and perfect confidence? These are objects worthy of the most profound respect, and warmest affection. He is the fertile source of all that is beautiful and delightful in nature. It is the Lord our God, who is alone worthy of homage, praise, and adoration. This is the employment for which we were created, and to which the whole creation invites us. If we obey our Creator, if we endeavour to conform ourselves to the rules of wisdom and order that he has followed in the formation and the arrangement of the universe, it will be the best manner of praising him; and if, full of filial confidence, we trust without fear in the tender mercies of God, it is the highest mark of respect and veneration he requires of us.

FEB. XV.

Bodily Advantages the Beasts have over us.

WHEN the bodies of beasts are attentively considered, we find they have many advantages which we have not. It is, in the first place, undeniable that their bodies are more solid, strong, and lasting. Most animals are able, as soon as they are born, to make use of their limbs, to seek their food, and to act according to the instinct given them by their Creator. They are not subject to all the cruel disorders we are liable to, and which so often destroy our constitutions. What wonderful instinct also, what sagacity and address they shew in their motions, and in the

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use of their senses! How delicate is their smell! How subtle and piercing their sight! What agility and swiftness in all their motions, whether they fly or run! If we also consider the wonderful construction of their organs, their admirable make, the noble and majestic form of some animals, it will be found that, in regard to the body, we have few prerogatives over them, and that they have even many advantages over us. There are some people who complain of the lot of man, and who are discontented, because God has not given them the swiftness of birds, the strength of the horse, the distinguishing smell of the dog, the piercing sight of the eagle, the fleetness of the stag. But, in truth, stupidity and ignorance only could give birth to such murmurs. If we knew the full value of a reasonable soul, we should be sensible of the immense advantage we have over animals, notwithstanding their instinct and address. Why has the Creator given to creatures deprived of reason certain prerogatives peculiar to their bodies? Why has he endowed them with such great strength, senses so exquisite, so much lightness and address in the several motions of their bodies? Why has he impressed upon them such wonderful instinct, and so much sagacity for obtaining their food? It could only be, to make them in some measure amends for the want of reason, and other faculties of the human mind, with which we are blessed. We can, by the use of our understandings, preserve ourselves from many disorders, and guard from many dangers. We may, by observing rules, or having recourse to medicine, cure our disorders and infirmities, or at least relieve them. Our intellectual faculties enable us to procure and enjoy a thousand conveniencies. The intercourse with other men in social life contributes to our welfare in many ways. The brute creation are deprived of all these advantages, by not having

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received the inestimable gift of reason. These inferior beings would then have been unhappy, if the Creator had not granted them some advantages to make amends for their want of understanding. He has accordingly, in some respects, been more liberal to them than to us, as to bodily advantages. He has given them a make, a form, and senses, adapted to their wants. He has given them variety of instincts, admirable industry and sagacity, to distinguish what is hurtful or salutary to them; to provide themselves food and other necessaries;—advantages which we have not in an equal degree, and which we can very well dispense with, as we have received privileges beyond comparison more considerable. Here we ought again to admire the paternal care of a gracious Providence towards man. It is for us, that God has formed the brute with such wonderful art. It is in order to be of more essential service to us, that they are endowed with so much strength, agility, and industry, with bodies so robust, and senses so exquisite. We should soon be liable to all sorts of inconveniences, we should be deprived of a number of great advantages, in regard to our support and our occupations, if the animals, whose daily service is so necessary to us, had fewer bodily perfections. Let us consider also, that the advantages which the brutes enjoy are limited to the present world, whereas we are created for a better; where our bodies, raised to the highest degree of glory and perfection, will be freed from all the defects and all the wants they are subject to upon earth.

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FEB. XVI.

The Moon.

'THE moon, next to the sun, is, of all the celestial bodies, that which has the most salutary influence upon our globe; and, if it was not in itself an object worth our attention, it would become so at least by the great advantages we derive from it. Even with a naked eye, and without a telescope, we can discover several phenomena of the moon. It is a round opaque body, which borrows its light from the sun, and is apparent to every part of the earth in twenty four hours (as the earth moves round its axis), and completes its own revolution in little less than twenty-eight days. But what the naked eye may observe in the moon, is not to be compared to what we discover by the assistance of telescopes and calculations. How much are we obliged to those enlightened men, who, to extend our knowledge, and to render the glory of our Creator more and more manifest to the eyes of mankind, have made inquiries and discoveries, which enable us to form the highest notions of the celestial bodies? By means of their laborious observations, we know, that the moon, which appears to the naked eye so small, is, however, considerable, with relation to the earth. Its diameter is two thousand one hundred and eighty miles, her proportionable size as one is to forty-eight; and though the moon is nearer to us than any other planet, it is two hundred and forty thousand miles distant from this earth. There are several spots in the moon, visible to the naked eye. Some of these spots are pale and dark; others are more or less luminous, according to the light they reflect. The bright spots are

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probably high mountains, which reflect the light of the sun from their tops; and the dark spots are fluid, transparent bodies—seas, which, conformably to their nature, absorb a great deal of light, and reflect very little back. These discoveries, to which no solid objection can be made, prove that the moon is not so inconsiderable a body, as ignorant people imagine. The size, the distance, and all that we know of it, give us, on the contrary, a new proof of the unlimited power and wisdom of our Creator. But was a planet so large as the moon designed for no other purpose than to light our globe for some nights? That body, which, to all appearance, resembles our earth, and seems proper for the same ends, was it created only to produce the flux and reflux of our seas, and for some advantage to our globe with which we are still unacquainted? Is it probable, that a surface of some millions of leagues square, should be without any living creatures? Would the Supreme Being have left that immense space an empty desert? Indeed it would be inconsistent with the wisdom and goodness of God. Let us rather believe that God has established his empire in that planet as well as among us. Without doubt, there are an innumerable number of creatures upon it, who adore with us the same Lord and Father; who are, like us, the objects of his providential care; and for whose happiness God provides with the same goodness as he does for ours. But, as our knowledge in this respect is still very imperfect, let us confine ourselves to the advantages which accrue to us from the moon. The tender mercy of Providence toward man, manifests itself very sensibly in this case. He placed the moon so near us, that she alone might shed more light upon our earth than all the fixed stars together. We derive from it, not only an agreeable object, but a thousand

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conveniencies and advantages; since, by the light of the moon, we can undertake journeys, wherever occasion calls us, prolong our work, and dispatch much business in the night-time. Besides, in what disorder and confusion should we be, in regard to the division and measure of time, were it not for the regularity with which the changes of the moon succeed each other. It is true, that the calculations of astronomers save us the trouble, on that account, of observing the variations of that planet. But all the use of almanacks is owing to the observations made on the course of the moon.

FEB. XVII.

The Rain waters the Earth, and makes it fruitful.

THE fertility of the earth depends chiefly on the moisture it receives from rain and other watery vapours. If the watering of the earth was left to the care of man, it would be an endless trouble; and, notwithstanding every effort, drought and famine would destroy us. In vain would mankind use all their powers; they would not be sufficient to water what they had planted. They might drain the pumps and the rivers, without giving water enough to the vegetables to keep them from withering and dying. How necessary, therefore, was it, that the vapours should be collected into clouds, as in reservoirs, and fall afterwards, by the assistance of the winds, upon the earth, to water the trees and plants. Every shower of rain enriches the earth, which would otherwise have a sad languishing appearance. The treasures which its surface prodigally bestows upon us, are infinitely more valuable to us than all the metals and precious stones it con-

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tains in its bowels. Society might subsist very well without gold or silver, but not without corn, vegetables, and pasture.

Let us reflect on the inexpressible blessings that rain produces on our globe. A seasonable shower renews the face of the earth, and has much more force and effect than the dew, which in the night-time moistens the grass and the leaves. The furrowed fields drink with avidity the beneficent rains poured upon them. The principles of fertility unfold themselves in the seeds, and second the labour of man. The husbandman ploughs, sows, and plants, and God gives the increase. Men do what is in their power; and whatever is beyond their ability, the Lord himself provides for. In winter, he covers the seed as with a garment. In summer, he warms and refreshes them by the rays of the sun, and by rain. He crowns the year with his blessings: and he grants them so successively, that mankind are not merely nourished, but their hearts are filled with joy and gladness. The divine blessing does not fall on cultivated fields only; it extends also over the meadows and fields of the deserts. The countries even that are forsaken by man, and from which no direct use is drawn, are still objects of providential care: For such is the goodness of God, that the hills and the valleys rejoice, and are adorned with smiling verdure. The rain does not fall in vain upon them. And if they do not yield fruit for our support, they are, at least, immense reservoirs of water for our earth: and they produce a great variety of wholesome plants and simples good for our health, and which serve also as food for animals.

Never let us forget God's blessings. How often, in this month particularly, is the earth watered with rain; but how seldom do we reflect as we ought upon this blessing! Let us learn to know

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the full value of it, and consider how gloomy, barren, and desert, all nature would be, if the sky had been to us like brass, and the earth as iron. All the plants and trees would perish: every living creature would faint: the rivers would dry up; and we should breathe death in the air. But every time the rain waters the earth, God sheds new blessings upon us. And yet we complain or murmur when the winter rains are heavy, or last any length of time. We rashly censure the government of God! Ah! rather let us bless the Creator, and praise his goodness towards us. By his order, the seasons are renewed and regularly succeed each other. It is for us that the rain falls, and makes the earth fruitful. God opens his liberal hand to do good to man. His blessings light upon our land, and fill it with peace and plenteousness. Let us then adore our Creator, and sing to his glory hymns of praise and thanksgiving. What has he not already done for us, and what may we not still expect from his goodness!

FEB. XVIII.

The Images of Death which Winter affords.

WE continually require warnings to make us think of the end of our days. We are too much inclined to banish the thought of death from our minds; and, if it was otherwise, the avocations and pleasures of life scarce allow us time for it, or, at least, to think of it so as to profit by it. It is, however, necessary for our repose and safety, that we should frequently reflect on this great event, in order to lessen our fears of it. Let us therefore take advantage of the present season for that purpose, and consider, as the images of death, some of the objects daily before us. Na-

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ture is deprived of the beauty and charms with which it was adorned in summer: the fields and gardens, where we walked with so much pleasure, are useless and deserted; they have no longer any thing inviting in them; the days are too short and disagreeable, to make us wish to pass them in the country. Is not this a lively image of our state, when arrived at the winter of life? All the charms we are so vain of in the spring or summer of life, disappear. The vexations, peevishness, and infirmities of age, no longer permit us to enjoy or relish the amusements of youth; and few young people find pleasure in our company: the short and gloomy days of age are a burden to us: and if we are reasonable, our wishes tend towards a better life. How short are the days at this season! and yet, now they are so dull, we should be in the wrong to complain of it. As our frail life is a constant struggle against sin and misery, is it not a blessing that God has so limited our earthly existence? The path to heaven is narrow, and full of thorns: ought we not then to bless Providence for making it so short? Several kinds of animals pass the winter in a sound sleep, from which they do not awake till they feel the mild and enlivening warmth of spring. So will our lifeless body rest in the grave, till the day of judgment shall awaken it from the sleep of death. In winter, the night surprises, and comes upon us, before we expect it, in the midst of our employments. Perhaps, when we proposed to finish such and such business, the evening comes suddenly and interrupts us. Here, again, we find a very simple image of the night of death: it will happen, perhaps, when least expected. In the midst of projects for future days; in the midst of very important undertakings, which we had hoped to accomplish, this dreadful death will surprise us.

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Grant, O God, that it may find us employed so as to be conducive to our eternal happiness! The most melancholy circumstance of the winter nights is certainly their length, which deprives us so long of the sun; and, perhaps, one reason for dreading death is, the thought of being so long in the grave. But as the winter nights glide imperceptibly away in a sweet sleep, so will death insensibly pass by; and we shall unexpectedly behold the great light of the new creation shine forth. These are the edifying and useful reflections which winter presents us. Let us not be afraid to contemplate these images of death; and let us endeavour to profit by them. Let the thought of our latter end be familiar, and present to us in every situation of life. Then shall we think of death without fear. It will be a comfort to us in affliction, a friend and faithful counsellor in prosperity, and a shield against temptations.

FEB. XIX.

Means to procure Fire.

IN these long winter nights, and during the severe cold weather, fire is an inestimable blessing, for which we cannot be too grateful. How wretched and miserable our lives would be at this season, if God had not given to fire the virtue of warming and lighting our houses; and if this element was not to be found every where, and in every thing? It is to be found in sulphur, in the fat of animals, in the wax which the bees gather, and in all vegetables, though they seem inactive, and there is no outward visible appearance of its effects. But their clashing together discovers it; and shews, at least, that there must be fire in every part of the air. By the quick repeated friction of hard bodies, such as steel and flint,

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the fire contained in them is put in motion; and the particles, which fly out of these bodies, and are violently acted against each other, acquire force capable of inflaming any thing. This is the common method of obtaining fire for our domestic uses. But we are generally content with enjoying the continual service this element does us, in the preparation of our food, in warming us, and in lighting our apartments, without being at the trouble to inquire how fire was produced. If we were more attentive to the causes of certain natural phenomena, we should every where find traces of infinite goodness and wisdom. Certainly it does not require much reflection to discover them in this instance. It is with a beneficent view that God has spread fire all around us, and throughout all nature, in order to be of all sorts of use, and that it might be enjoyed on all occasions. This matter takes every kind of form for our use; and, by uniting with many other bodies, it becomes a great advantage to us. How happy for us if we did but accustom ourselves to be more observant of the many blessings we daily receive from the liberal hand of God! Yet, alas! it is that constant and daily enjoyment of them which makes us so cold and indifferent to them. These proofs, however, which we daily receive of God's goodness, are what we can the least dispense with; and, from that single circumstance, they merit our particular acknowledgement. Let us then often think of our wise and merciful Preserver; and, in enjoying his blessings, even those which appear the most inconsiderable, let us accustom ourselves to raise our hearts to him, and to honour him as the source of all good.

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FEB. XX.

The Equal distribution of the Seasons.

WHEN the sun is far from us, and when the severe cold binds and shuts up our earth, there are some countries where the inhabitants enjoy all the beauties of spring; others, where they are gathering rich harvests; and others, in fine, where autumn fills her granaries with fruit. It is in this manner that Divine Wisdom has regulated the change of seasons, and distributed the same favour to all his creatures, at different times. His impartial love extends itself over every being he has made, without respect to rank, nation, or merit. It is sufficient that they require his blessings, for him to take pleasure in granting them. His beneficent views extend over the deserts of Arabia, with as much goodness as over the smiling countries of Europe; and his government is the same from pole to pole. But, if God distributes the pleasures of this life equally, why are some countries deprived of the pleasures of spring, while we enjoy them in such abundance? Why are the rays of the sun so partially spread, that in some climates there is darkness, and in others light, for whole months together? Why are not the frozen countries near the pole as beautiful and fertile as our plains and valleys? What art thou, O man, who darest to ask such questions? What right hast thou to demand an account of the infinitely wise Being, for the manner in which he rules the world? Vain mortal, learn to be humble, and to acknowledge traces of a sovereign wisdom, in the very things wherein thy weak understanding imagined there were defects. Perhaps thou supposest Providence has refused, to certain parts of the earth, advantages and happi-

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ness which have been lavished with profusion elsewhere. Not so: God has given to each country what was necessary to the life, support, and content, of his creatures. All is planned according to the climate in which they live; and Providence has every where provided for their preservation and support. The hours of the day vary in different parts of the world, according to certain rules; but all the zones have nearly the same number. There is scarce any inhabited country which the sun shines more upon than another. All the difference is, that they enjoy it at different times. With the inhabitants of the torrid zone, the days and nights are always of equal length; while, with the neighbouring zones, that is the case but twice a-year. It is true that the sun quits them by turns, and gives summer to one side of the earth, while it abandons the other to winter. But it never fails to return regularly, from one of the limits of its regular course to the other; and, if the winter days are shorter than the nights, summer makes ample amends in that respect. Even the inhabitants of the frigid zone, who are deprived of the sight of the sun for several months, see it afterwards on their horizon several following months; and though they have some hours less of day-light, they are made amends for it by long twilights.

Lord! the earth is full of thy mercies. Thy goodness is spread all over the heavens, and extends to the very clouds. What country is there, in the whole universe, which has not experienced the effect of thy goodness? What province, throughout thy immense empire, is there, in which there may not be seen traces of thy beneficence? Where is the creature, where is the man, who at each season cannot see and feel how good Thou art? I rejoice at living under thy merciful government. I rejoice in the numberless blessings which Thou scatterest over all the earth, for

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the happiness of thy creatures. How is it possible I should not wish that all my fellow-creatures, throughout the world, may be as happy, as tranquil, and content, as I am? Yes, Thou knowest; Thou, O God, who seest my heart, Thou knowest that I am neither covetous nor selfish enough to behold, with regret, the happiness of others, or not to wish their welfare equal to my own. O God of mercy, grant that I may become more and more like Thee. As Thou lovest all thy creatures, and as, without respect to persons, Thou doest to each all the good they are capable of enjoying, be pleased to kindle in my heart the same universal love for my fellow-creatures, that I may do them all the good in my power; and, at least, that I may raise to Thee my ardent prayers for all mankind, without exception.

FEB. XXI.

The Utility of our Senses.

I HAVE senses, that is to say, I am a being who, by means of several wonderful organs of my body, can procure myself several sorts of sensations. By my eyes I can acquire the perception of light and colours; by my ears, that of different sounds; by smell and taste, that of agreeable or disagreeable emanations of savours and scents, of sweet and bitter, and other such properties of the body, which I can make use of; and lastly, by my feeling, I have the sense of heat and cold, of wet and dry, of soft and hard, &c. Now, I represent to myself how wretched I should be, if I was deprived of the organs of speech, seeing, hearing, taste, smell, or feeling. If I had not *sight*, how could I escape that multitude of dangers which surround me, or form to myself any idea of the magnificence of the heavens, the beauty of

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the country, and all the agreeable objects with which the earth is filled? Without the organ of *hearing*, how could I perceive many dangers at a distance? How could I exchange thoughts, or communicate them? How enjoy harmony and the charms of music? How could I, in my youth, acquire school knowledge, learn languages, obtain ideas, the talent of reading, and many other faculties, which distinguish me so advantageously from the brute creation? If I had been refused the organs of *smell* and *taste*, how could I distinguish, in my food, what was hurtful or otherwise; enjoy the perfumes of spring, and a thousand things, which now afford me such pleasing sensations? And, lastly, without my *feeling*, how should I be able to discover, either in food, asleep, or awake, what was hurtful to me? or, how should I be able to attend to my preservation? I cannot, therefore, too much praise and bless God, that I see, hear, smell, and speak. I adore my merciful Creator. I acknowledge and praise his goodness. My mouth shall glorify him in songs of praise and thanksgiving. My ears shall be open to the universal hymn, which all nature chants to his honour. Oh! may I never be insensible to the value of my senses, or make a bad use of them. Thou, my Creator, hast given them to me for the noblest purposes. How unworthy should I be of thy boundless goodness, of the admirable formation of my body, if I only employed my senses in brutal enjoyments, without proposing to myself any higher views? How wretched should I be, if I only sought my happiness in sensuality, and preferred it to the much nobler pleasures of the mind; for there will come a time when my eyes will no longer be affected by external objects, when the harmonious sounds of music will no longer please my ear, nor the most exquisite dainty, or delicious wines, soothe my palate. A time will come, when my senses

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will take no pleasure nor satisfaction in any earthly thing. How wretched should I then be, if I knew nothing that could feed my mind, or comfort my soul! Divine Spirit, direct and lead me, so to make use of my senses, that I may never lose sight of the great purpose of my existence.

FEB. XXII.

Elevation of the Soul to God.

WHEN I lift up my heart to God, I approach the end for which I was placed in this world, and I taste, beforehand, the felicity which awaits me in heaven. How contemptible do the vain, trifling amusements of the age appear to me, when my heart accustoms itself to seek its joys and happiness in God! How humbled and little in my own eyes do I appear, when I compare my nothingness with the infinite mercy of God! How is the pride of my nature mortified, when I lose myself (to speak in that manner) in the ocean of divine perfections! And what an ardent desire does it kindle in my heart for that happy and glorious day, when I shall be for ever united to the Supreme Eternal Being! But am I sufficiently sensible of the inestimable advantage of reflecting often on God, to induce me to form, in reality, the resolution of doing as I ought? Alas! instead of filling my mind with this great and sublime object, I but too often fix my thoughts on earthly and perishable things. Instead of finding delight in meditating on my Creator, I take pleasure in nothing but what flatters my senses. Instead of loving that Being, in whom is centered all that can be conceived lovely, and who alone can make me perfectly blest, I fix my heart on the world, and I passionately love objects which cannot insure my happiness, and which I cannot long en-

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joy. May my past experience teach me wisdom hereafter. Hitherto I have only loved temporal blessings, and have wholly given up myself to them. I have sought my peace and happiness in things even more frail and perishable than myself. But, through the grace of God, my eyes are opened. I contemplate a Being, the centre of all perfection, who has made me out of nothing, and given me a Soul, the desires of which can only be satisfied with infinite blessings. To that Being I consecrate my heart, devoting myself entirely and for ever to him. In him alone shall I therefore seek my joy and comfort. These earthly enjoyments, which I have hitherto imprudently preferred to heavenly blessings, I will exchange for much more real and solid advantages. I will make use of the first, as it is the will of my Creator; but it shall never be in preference to the love of God. On the contrary, every creature affords me an opportunity to raise my thoughts to the Creator, and excites me to bless the goodness of him who has given to earthly things the power to cheer my soul. If pleasures, enjoyed only by means of a frail and perishable body, can affect me so sensibly, how superior must those delights be of a future, happy state, disincumbered from this earthly tabernacle! What ineffable sensations shall I experience, when my soul, freed from its fetters, will be able to contemplate at liberty the presence of the Lord! If a ray of light is so enlivening, what will the sun itself be! If, even in this world, God is so admirable in his works, what will he be in a future state?

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FEB. XXIII.

Causes of Heat and Cold.

WHAT occasions the transition from excessive heat to the severest cold? By what means does nature work these changes? It is not to be doubted, that, during the winter, the temperature depends on the situation of the sun. For, when our globe, in its annual course round the sun, is placed so that its northern hemisphere turns from it; when the rays fall very obliquely upon our countries, and when the sun is but a few hours above our horison, it is not possible its rays should give warmth. But the heat does not entirely depend on the situation and distance of the sun, which runs over the same constellations every year, and is not farther from us one year than another; yet, the degrees of cold in our winters differ very much. Some winters are as mild as autumn, and in others, deep seas are frozen, and men and animals can scarce protect themselves from the cold. Even in the countries where, most of the year, the days and nights are of equal length, the power of the sun is too weak to melt the ice on the tops of the mountains. The severest winter reigns at their summit, and the hottest summer in the valleys, though the same rays fall equally on both places. If the sun was the only cause of heat and cold, these phenomena would be unaccountable. Nature is rich in means; and a thousand causes, unknown perhaps to us, second its operations. But we know, at least, that the nature of the air and the winds have great influence, in regard to the heat and cold of a country. From thence it often happens to be cold in the longest days of summer, when the atmosphere is loaded with vapours, and the sky has been long darkened with clouds, or when the sharp north wind blows strong. From

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thence it happens also, that in winter the cold is not severe, when the southerly winds bring us warm air. The nature even of the soil contributes to heat or cold. In Siberia, for example, where the ground is full of saltpetre, and other salts, it is always colder than in countries nearer the pole, and where the rays of the sun are more oblique. The heat of the earth itself, and its interior heat, cause also a difference of heat and cold in the soil of certain countries.

These causes, and perhaps many others unknown to us, occasion the changes of heat and cold upon the earth. But who can know all the springs of the great machine of the universe, or explain their different effects? Most of the phenomena puzzle and confound us; and we are obliged to confess that all the sagacity of the greatest philosophers does not enable them to penetrate into the depths of nature. We see but a part, and undoubtedly the smallest part, of her operations. And certainly it is for very wise reasons that the Creator has concealed from us the causes of so many effects which we see in the course of nature and his providence. He meant by this to teach us to look into ourselves. What use, in reality, would the most perfect knowledge of nature be to us, if we neglected to rectify, and be acquainted with our own hearts? We know enough of it to teach us wisdom and content. Perhaps a greater knowledge of nature would make us vain. Perhaps it would disturb our rest, and make us forget God. Let us endeavour only to make a good use of the little we know, by becoming better; and thus glorifying the Supreme Being. If after all our inquiries and reflections, there still remain many things concealed from us, let us from thence draw this natural conclusion, That the wisdom of God surpasses all our conceptions, and that it is infinite: that our understandings are limited; and therefore, with a

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proper sense of our weakness and incapacity, our great duty is to humble ourselves, and adore the Most High God.

FEB. XXIV.

Singularities in the Kingdom of Minerals.

IT would be difficult, if not impossible, for our weak and limited understandings, to take in at once the whole kingdom of nature, and to learn altogether the wonderful properties of things. We shall more easily obtain a knowledge of nature, if we begin by some separate objects, some particular beauties, and dwell first on the most striking phenomena. Let us then, at present, reflect on some curiosities among minerals. We shall discover there, as every where else, traces of the infinite wisdom of God. Amongst these there are few more worthy our attention than the loadstone. When this stone is suspended, it turns itself constantly, one end towards the north, and the other towards the south; and it is in those two ends, or poles, that it has the strongest power of attraction. It is remarkable, that it attracts nothing but iron; and that, if two loadstones are put together, their poles of different denomination, that is to say, the southern and northern pole, attract one another; whereas, the poles of the same name, that is to say, the two southern, or the two northern, repel one another, and seem to fly from each other.

There are two properties found in quicksilver equally wonderful. It takes every form one wishes to give it; but it always ends by re-assuming its own natural form. In the fire it rises into vapour. When it is shaken a long time, it changes into dust. By being dissolved, it becomes a hard and transparent chrystal; but it can always be

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restored to its former fluid state. Gold is the first and most valuable of all metals, not only from its scarcity, but from its admirable properties. It is the hardest and most unalterable of all bodies. It can bear, for two months, being in the hottest fire, without any sensible loss in its weight. Its parts are so fine, that a grain of beaten gold can cover fifty square inches, in such a manner that the naked eye may distinguish, on the two surfaces, four millions of particles; and its ductility is such, that, with a single grain, one may draw out a thread five hundred feet long. The wonderful form of common salt; the brilliant stones; the singular figures of the earth, where the metals are concealed, the petrified bodies that are often found on the high mountains, some hundred miles from the sea, which is their original source; and an hundred other singularities in the mineral world, seem formed to awaken our curiosity. No employment whatever has more charms, is more satisfactory, or has more variety in it, than an attentive observation of nature. Supposing we were to live ages on the earth, and that we were to employ every day, every hour, in studying only the singularities amongst minerals, there would still be, at the end of that time, a thousand things we could not explain, which would remain hidden from us, and would more and more raise our curiosity. Since our lives scarce extend to half an age, let us then make good use of the little time granted us; and let us devote it, as much as our first duties will permit, to the observation of nature; and thus enjoy the most innocent and lasting pleasures of the mind. The satisfaction we shall find in it will increase more and more, in proportion as we reflect more attentively on the views God has proposed to himself in his works: for the wonders of nature are infinitely more to be admired, and more sublime, than all the productions of human art. The latter do not

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always promote our welfare, or make us better: they are often mere objects of fruitless admiration. But all the works of nature, and even the most singular among them, tend to the universal good of the world. They exist, not only to be seen, but also to be enjoyed; and all, without exception, proclaim the goodness, as well as the wisdom of God.

FEB. XXV.

Daily Proofs experienced of Divine Providence.

LET us try to enumerate all the blessings which the mercy of God has heaped upon us, from the first moment of our existence to the present hour. Could we reckon the stars, we could as little think of numbering the blessings we have received during the course of one year only. What would it be, then, during the course, perhaps, of a long life? What mercies received during our infancy, though they are now forgotten? nights passed quietly in a sound sleep; food that nourished and strengthened us. From how many visible and invisible dangers have we not been delivered? How often has God provided for our necessities, and confounded our incredulity, when we thought it impossible? Nothing can happen to us from which the eye of Heaven cannot save us. Every day of our lives has increased the number of God's mercies. Each time the sun begins his course, his goodness is renewed towards us. And who knows how often God has shewn his mercy, and preserved us from dangers unknown to us, and with which we shall only be acquainted in the world to come? What shall we then say of the blessings of the Lord, in having redeemed us, through Jesus Christ; in having given us the gospel, to teach us the way to salvation? What mercy, that we were not born in the darkness of

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Paganism, instead of the light of Christianity; and that God continually works to our sanctification and perfection? Are not these so many proofs of his goodness and tender compassion? I am willing to believe that it is impossible any body can think of reckoning the amazing number of God's blessings. Let us then limit ourselves to a single day, and endeavour to compute the mercies which each day brings with it: light, air, food, strength to labour, the dwelling we inhabit, and the relations on which our happiness depends.

O may these daily proofs of the providence and goodness of God make the strongest and most lasting impression on our hearts! They will undoubtedly, if our souls are susceptible of any emotions of gratitude. If we have any sense of the greatness of God's mercy, and our own unworthiness, it is impossible we should not feel the highest gratitude towards the Preserver of our lives. But, in order to maintain in our hearts a lively remembrance of God's blessings, let us often compute them. The more we think of them, the more we shall be disposed to magnify the Lord our God, and the more delighted we shall be in celebrating his praise.

FEB. XXVI.

Tranquillity of the Night.

I CANNOT think, without admiration and gratitude, on the tender care of Providence to secure us repose at night. When the day closes, a calm us spread over all nature, which proclaims to every creature a rest from labour, and invites mankind to sleep. During the time destined for the repose of man, nature, in favour of him, suspends noise, dazzling light, and every lively im-

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pression. All animals, whose activity might disturb our sleep, have themselves occasion to sleep. The birds seek their nests; the horse, the ox, and our other domestic animals, sleep around us. But this tranquillity in the night is not equally agreeable to every body. Many, who, from pain, sickness, and other accidents, pass restless nights, wish this calm, this melancholy silence interrupted. Their sufferings and their uneasiness seems to increase, while all are asleep around them. They reckon the hours, and are impatient of day, in the hope that society will be some relief to them. Many wicked people also, who pass the day in continual disorder and dissipation, find the tranquillity of the night painful and troublesome. It awakens their conscience, and the least noise frightens them.

I bless thee, O God, for making the repose of night so agreeable and refreshing. The health and peace of mind I enjoy, procure me the sweetest sleep. When I have gone through the labours of the day, the coming of night makes me adore thy goodness, which has disposed all things so happily to give us a quiet repose. I lie down with tranquillity, while wicked men and robbers walk in the dark paths of crimes and sin. I sleep in peace, while many sick people, lying on a bed of pain and infirmities, are sighing for sleep. They would consider the smallest rest as a blessing, and cannot obtain it. I enjoy a refreshing slumber, while the intemperate man is still loading himself with meat and drink; while the miser is tormenting himself with sordid care, and with the fear of one day wanting the necessaries of life; and while the discontented and ambitious man rolls in his mind the most distant plans of future elevation and greatness.

But how often does man interrupt the tranquillity of night by levity or malice! The boisterous noise of drunkards, and the wild spirits of liber-

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tines, often disturb the repose of others, and deprive them of the sweets of sleep. Ought we not to respect the order God has so wisely established in nature, too much to disturb it in the levity of our hearts?—Ought we not to love our fellow-creatures enough to prevent us from disturbing their sleep, and, by that means, perhaps hurting both health and life?—Alas! this ill-timed noise may happen to disturb and frighten, in one place, a dying person; in another, a woman in labour, or a mother nursing her child.

The repose I hope for in the grave will be very different. There I shall sleep in peace, and shall not be awakened till the voice of my Judge shall call me back to life. How happy are the faithful, whom death has sent to God! They are released from all the miseries to which we are subject in this world. Here the very happiest life is passed in continual hopes and fears, and our repose is disturbed by numberless troubles and anxieties. The righteous, on the contrary, whose bodies rest quietly in the grave, are free from all misery; and never more will cares, sorrow, or pain, embitter their joy.

FEB. XXVII.

Winter is the Image of our Life.

IN these winter days there are continual changes. Flakes of snow and showers of rain, storms and calms, cloudy days and serene skies, succeed each other. The snow has scarce covered nature with its brilliant whiteness, when the rain comes to destroy it. The sun scarce shows itself, when it again disappears from us. Are there not the same vicissitudes in the moral world? If many of the days of winter are dark, dull, and gloomy, so are many scenes through life. But as storms and darkness are necessary, and conformable to

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the wise laws of nature, so are the disagreeable accidents and the adversity which we sometimes experience in the world. Who can prevent the day from being obscured by dark clouds; or our happiness from being disturbed, sometimes by others, and sometimes by accidents? How is it possible the sky should be always calm and serene; or that our minds should enjoy uninterrupted repose? The present constitution of our nature will as little admit of our being always free from pain and disagreeable sensations, as the constitution of the corporeal world would admit of the air never being loaded with clouds. Passions, which often produce good, but often also produce bad effects, are exactly, in the moral world, what storms are in nature: and, as winter and frost are sources of fertility, so are afflictions and sufferings the means to attain wisdom and virtue. Darkness teaches us the value of light. A continual light would dazzle and fatigue the sight. A serene day never gives us so much pleasure as when it has been preceded by dark and cloudy weather. In the same manner, we should be less sensible of the blessing of health, were we not taught to feel it by the painful effects of sickness. The excellence and advantage of friendship would touch us less sensibly, if we did not sometimes meet with faithless and false friends. After all, it is certain that we in general are too much inclined to exaggerate our evils. The events and accidents which happen to us are seldom as melancholy as we imagine. Our self-love, our pride, and our excess of delicacy, blind us often to such a degree, that we look on every thing that happens to us as real and great evils; while, on the contrary, we take no notice of our real advantages, and the sweets which attend us. It is at least certain, that all our troubles ought to be reckoned as nothing, in comparison of the multitude of blessings and pleasures that are be-

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stowed upon us by Divine Providence. Those very evils of which we complain, will prove real, though disguised blessings, if we know how to make a good use of them; just as the snow, the storms, the frost, and other variations of the present season, are means which God makes use of to grant us new favours. When the sky has been long dark and stormy, the clouds at length dissipate, and calm and sunshine bring back joy and gladness. The heavier the showers are, the sooner the clouds vanish. The darker they are, the sooner the rays of the sun disperse them. Misfortunes fill up but a short space of our lives, and when they appear to us the heaviest, when we seem sinking under them, it is a proof that they are soon to end.

I will accept then, without murmuring, the portion of evil it has pleased God to allot me. I should be unreasonable to expect nothing but pleasure and days of happiness. No: let rain and sunshine, darkness and light, succeed alternately through the course of my life, I am, O Lord, resigned to it. If thou thinkest proper to rouse and shake my soul by the storms of adversity, thy will be done! What matter whether the cup that is given me be more or less bitter; that my troubles be more or less durable, while I am on this side the grave. I know in whom I have believed. I know, O my God! that thou wilt one day grant me eternal salvation. Those who sow here below in tears, will reap with songs of triumph. When the short miseries of life are over, I shall find how advantageous they have been to me; and I shall bless God, for having conducted me to heaven, through paths of tribulation and sorrow.

These are the thoughts which will support me in every misfortune. As the expectation of spring makes the gloomy appearance of winter supportable, so does the sweet hope of futurity encourage

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me to bear with resignation and fortitude the present miseries. Through the darkness of this life, there opens to me the delightful prospect of an happy hereafter. What I foresee in eternity already sheds light on the path through which I walk; and by this way I shall imperceptibly arrive at the blessed abodes of peace, light, and happiness.

FEB. XXVIII.

Use of Mountains.

WOULD it not be more advantageous to our globe, if its surface was not so uneven, and if it was not disfigured by so many mountains? It seems to me, sometimes, that the form of the earth would be much more regular, that our sight would extend farther, that we should travel more conveniently, and that we should enjoy many other advantages, if the earth was only a vast plain. But, perhaps I am mistaken in this opinion. I wish then to inquire into it, and reflect on the use of mountains, in order to see if I have reason to be discontented with the present plan of our globe.

In the first place it is evident, that it is from the mountains and hills that the springs flow, which are produced either by heavy snows, or by the clouds with which those heights are always covered. It is that which keeps up the course of great and small rivers. Those chains of high mountains which extend from east to west, and which traverse a great tract of country, serve to hinder the dispersion of vapours, and to condense them into water. They are so many stills, which prepare and render the water sweet for the use of man and beast. Their declivity gives a moderate fall to the springs, and from thence they flow gently into the valleys, which they wa-

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ter and make fruitful. Besides this inestimable advantage of springs and fountains which the mountains procure us, they have many others. They serve for dwellings to several kinds of animals useful to us; they afford subsistence, without any trouble of ours, to multitudes of beasts, whose flesh and skins are very necessary to us. On the sides of mountains, there grow trees, plants, and an innumerable quantity of salutary herbs and roots, which are not cultivated with equal success in the plains, or have not the same virtues. It is in the bowels of the mountains that metals and minerals form themselves, which would not propagate so well in low and level countries, for want of necessary moisture. Mountains serve also to shelter us from blasts of the cold and cutting north and east winds. They are the fosterers of the most exquisite vines, and their bosoms contain precious stones. They are, in a manner, the bulwarks of nature, to guard countries from the fury of seas and tempests; and, like ramparts and natural fortifications, they defend several states from the invasion of enemies, and the ambition of conquerors. They perhaps preserve the balance of our globe. It is true that some of those mountains are dangerous and formidable. They occasion many shocks and earthquakes, and the volcanos spread flames and destruction all around. But we must consider, that, as sulphur, saltpetre, and other minerals, not only contribute greatly to the fertility of the earth, but are also necessary to the life and moistening of all sorts of plants, it was proper there should be a kind of universal magazine, where these materials should be deposited, in order to be afterwards scattered by the winds over the whole earth. And though there should be some inconvenience from them, they cannot furnish any reasonable objections against the wisdom and goodness of God, since the blessings we derive from them are infinitely

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superior to the evils they occasion. In this respect, then, we have no reason to complain of the contrivance of our globe. If there were no mountains, we should be deprived of several sorts of stones and fossils. There would be no rivers, no springs, no lakes. The sea itself would become a stagnating marsh. We should want a great number of the finest and most salutary plants, and several sorts of animals. The privation of one single thing in nature might be sufficient to make our lives sad and miserable. Let us therefore conclude, that mountains, as well as every other part of it, prove the wisdom, power, and goodness of the Creator.

Lord God Almightly, I adore thee, and I acknowledge, with the most profound veneration, the wonders of thy wisdom. Every thing that exists, every thing Thou hast created, from the smallest grain of sand to the highest mountain, combines, and is in harmony with each other, and full of benefit to thy creatures. On the heights, as well as in deep places, on mountains and in vales, above and below the earth, Thou shewest thyelf the Magnificent Benefactor of thy creatures.

FEB. XXIX.

Motives for Confidence in God.

WHEN I reflect on the infinite perfections which are manifested in the plan of the universe, and on the manner in which God conducts and governs it, my confidence in Him must necessarily increase and strengthen more and more. How easy ought I to be, in regard to my life, since it it is in the hands of that great Being, of whose power, wisdom, and goodness, I have as many proofs as there are creatures in my sight? What wishes can I form for my happiness, which may

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not be fulfilled by that God, whose unlimited power has been able to raise out of nothing so many millions of worlds? Are there any troubles, sorrows, or difficulties, from which I may not be happily drawn, by that infinite wisdom which has spread the heavens, and formed every creature in so wonderful a manner? What can hinder me from committing my way unto the Lord? What can prevent me from having recourse to him, in all my troubles and distresses, and from hoping that he will hear my prayer? It is true that I am but a very weak creature; I am lost in the vast multitude of his works; and when I represent to myself his greatness, and the infinite extent of his government, I often say to myself, Who am I, to dare to hope that this great Being will always listen to me, and that he will deign to cast his eyes on me, every time in my troubles, that I may have recourse to him? But, on the other hand, I comfort myself, when I consider that his greatness, his majesty, and the government of so many millions of worlds, does not hinder him from extending his cares to the smallest worm: why then may he not give some attention to me, who, though insignificant, have received from him, both as a man, and as a Christian, prerogatives much superior to other creatures? Here my conscience strikes me, and reproaches me with being a sinner, with having, a thousand and a thousand times, wilfully transgressed the commands of my Creator and Master; and from thence being, without comparison, more unworthy of his goodness than the lowest creatures, since they, at least, have not offended him, nor ever could be guilty of sin towards him. My conscience represents the justice of God to me, in as strong colours as the whole world paints to me his power and goodness. It makes me apprehend he may use his power, in giving me as a terrible example of his vengeance

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to the whole earth; and it is true, wherever I turn my eyes, I can no where find relief from these dreadful thoughts, to quiet my agitated mind, or give me a just subject of consolation. But it is here that the salutary truths of the gospel come to my assistance. Eternal thanks to thee, O merciful Redeemer, for it. The knowledge of God, which, without Thee, could not but trouble and affright me, is become, by thy sufferings and death, a source of joy and comfort to my soul. It is only through Thee that I can look up to this God, whose greatness all the world proclaims; that I can, I say, look up to him as a Father, put my trust in him, and hope that he will grant me happiness, not only in this life, but to all eternity.

MARCH I.

An Invitation to Contemplate God in the Works of Nature.

O YE who adore with me the Lord, by whom the heavens and the earth were made, come and reflect on his works! Behold the wonders he has done! Acknowledge, and have a lively sense of his mercies! Of all the knowledge we can acquire, this is the most important, the most easy and agreeable. We could dispense with many sciences which we take such pains to learn; but the knowledge of God and his works is absolutely necessary, if we wish to fulfil the end of our creation; and by that means secure our happiness here and hereafter. We do well, undoubtedly, to seek to know God, such as he has revealed himself to us in his divine word: but we shall not receive that revelation with an entire conviction of heart, if we do not join to it this other revelation, by which he has made himself manifest to

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as throughout all nature, as our Lord, our Father, and Benefactor. It is the best preparation to understand, and to receive as we ought, the gospel of Jesus Christ, for this reason, because, in teaching his disciples the truths of religion, the Divine Redeemer often spoke of the works of nature, and made use of the objects which the physical and moral world afford, to lead his hearers to reflections on spiritual and heavenly things. In general, it is a noble employment, and well worthy of man, to study the book of nature continually; to learn in it the truths which may remind us of the immense greatness of God, and our own littleness; his blessings, and the obligations they impose on us. It is shameful for man to be inattentive to the wonders which surround him on every side, and to be as insensible to them as the brutes are. If reason has been given to us, it is, that we may make use of it in acknowledging the perfections of God in his works. What employment can be more pleasing to the human mind than meditations on the admirable works of the Most High! To contemplate, in the heavens, the earth, the waters, the night and day, in a word, throughout all nature, the wisdom, power, and goodness, of our Creator and Preserver! What can be conceived more delightful than to discover in the whole creation, in all the natural world, in every thing we see, traces of the providence and tender mercies of the Father of all beings! There are no amusements, no worldly joys, of which we are not soon tired. But the pleasure we feel in contemplating the works of the Lord is a pleasure ever new. And were we to reflect upon them for a million of years, we should be so little tired of the employment, that we should, on the contrary, find new charms in it. It is in this light I often represent to myself the felicity of the saints in heaven. I ardently wish to be with them, because I am per-

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suaded it is in their society, in their blessed intercourse only, that my insatiable desire of increasing in knowledge and wisdom is to be satisfied. But; while we are still at a distance from this happiness, let us endeavour, at least, to come as near it as possible, by habituating ourselves now to what will be hereafter, and for evermore, the employment of all the blessed saints and angels. Let us adore God in his wonderful works. Let us endeavour more and more to be acquainted with Him. Let us reflect on his greatness. Let us admire his power and wisdom in each of his creatures. And let us observe, in every season of the year, his goodness and tender mercies towards every being on earth. This employment will make us not only happy but virtuous: for, if we have God and his works continually in our sight, with what love and veneration shall we not be penetrated? with what confidence shall we not resign ourselves to Him? with what zeal and transport shall we not sing his praise? O God, who art so worthy of all adoration! I will continually reflect, with gratitude and veneration, on the wonders of thy power and wisdom, which fill the whole universe. I will raise myself from earth to heaven, by the chain of beings Thou hast formed, in order to know Thee, to feel, and to enjoy thy goodness. Every thing around me, every thing within myself, will serve to lead me to Thee, as the source of all; every thing will more and more contribute to inflame me with love and piety. These, O heavenly Father! are the engagements I make before heaven and earth, in presence of every creature thou hast formed! This sun which shines upon me, this air which I breathe, this earth which bears me, and gives me food, all nature, so wisely formed for our wants and pleasures, shall one day rise as witnesses against me, if I neglect to contemplate and admire thy works.

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MARCH 11.

Bad Weather.

NATURE is still robbed of its ornaments. Its appearance is still gloomy and savage. The sky is covered with thick clouds, and the air is loaded with vapours and snow. The mornings are wrapped up in impenetrable fogs, that conceal the view of the rising sun from us, which scarce shews itself, before dark and stormy clouds arise to prevent the earth from feeling its benign influence. How little warmth it gives! No herb ventures to spring up. Every thing still remains dead, and stripped of its charms.

When will the lovely spring return? When will those fine days come, in which the early flowers invite us to the fields and gardens? I doubt not but many hold this language, and bear with impatience the dull March days. But let us consider that even this temperature of the air, which we dislike, contributes to the good of the whole, and is part of the plan formed by God in his government. Were it not for these days, which appear to us so disagreeable, all our hopes of the advantages of summer would vanish.—Storms are blessings of nature, and frosts are means she makes use of to render the earth fruitful. If the air was at present milder, and the weather finer, we should see millions of insects hatched, which would be very hurtful to the seeds sown in the earth, and to the blossoms. What a risk also would the buds run, which the mild weather had brought forth, if there came a frost? But such is our blindness and ignorance, that we murmur against God, when we ought to adore and bless him: and we take for imperfections what ought to make us acknowledge the

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wisdom and goodness of our Creator. We seldom know what we desire. To punish us for our imprudent and unreasonable wishes, God need only to grant them. If the spring already displayed all its charms, how many following days would lose their value! How quickly should we tire of them! And how hurtful to our health would the sudden change be from severe cold to intense heat! It is a blessing of God (a blessing which, like many others, we are insensible to), that spring draws on imperceptibly. Its delay keeps us in the most agreeable expectation, and our pleasure is but the greater when it comes. The rough stormy weather of March is a remain of the severity of winter. It prepares us for the enjoyment of fine days, and is the forerunner of that delightful calm which spring sheds upon our country.

MARCH III.

The State of some Animals during Winter.

WE do not yet see any of those millions of insects and birds, which, during summer, are in the air, in the water, and on the earth. At the approach of winter they disappear from our countries, where the climate does not agree with them, and where they can no longer find food. The first stormy day is a signal to them to rest from their labour, to put an end to their active life, and to quit their homes. We mistake if we go farther, and believe that winter destroys those animals; they continue to live even in that season of the year. Providence so provides, that none of them perish. The body of some animals is formed in such a manner, that the same causes which deprive them of food, make such revolutions in them as prevent their requiring any. The cold numbs them, they fall into a sound sleep, which

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lasts till the return of heat upon the earth, causes their necessary food to spring up, and wakens them from their heaviness. These animals hide themselves in the sand, in pits, or hollow places, in the bottom of ponds or marshes, where they cannot be found out or disturbed. Their state is a kind of death, or rather a swoon; and they do not revive till the gentle warmth of spring penetrates to their retreats. Some sort of birds, at the approach of winter, undertake long journeys, to seek in other climates a more temperate air and proper food. Some fly in numbers from one country to another. Several go to Africa, crossing the Mediterranean, and return the following spring to our countries.

Lord, how admirable is thy wisdom! How tender and beneficent thy mercies to the least of thy creatnres! Thou hast impressed upon the mind of some beasts that wonderful instinct, which warns them of the day in which they should abandon their summer habitations, in order to pass their winter in another climate. Thou hast pointed out to others the places where they may pass in safety their night of winter in a sound sleep. Thou revivest them again, when the season of their new life arrives. Every time I reflect on these changes, they lead me naturally to think of what will happen to myself at my death; for my state, in some measure, resembles that of these birds. At the end of my life I shall also quit my home, my pleasures, and my companions, to go into a better world. I shall also rest and sleep some time; but, at the moment of the new creation, I shall awake; and, clothed with the strength and beauty of youth, I shall begin a life that will be eternal. What happens to animals affords me also another edifying reflection: I see from thence that God watches over even the very smallest link of the immense chain of beings. I discover with what fatherly goodness he provides

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for the preservation of the weakest and lowest of creatures, in situations wherein it would appear impossible to mere human wisdom. Would it not then be doing injustice to the wise providence of my Creator, to doubt his care of me, and to give myself up to trouble and anxiety about my subsistence? Certainly, that God who gives to insects and to birds their food in due season; that God who provides them retreats, and places of rest, in pits and rocks; who directs them to find their food in different countries; that same God will take care of me in time of need and distress. I have a perfect confidence that he will provide all that is necessary for me, even when I see the least likelihood of it; he will find me a place of refuge, where I may rest in peace.

MARCH IV.

Winds and Tempests.

WITH what violence the air is agitated! Hear how the winds roar in the upper regions! Behold, how the clouds gather! how rapidly they fly! what deluges of rain they pour upon the earth! How terrible the force of the winds! they tear up the largest oaks; they throw down palaces; they shake the foundations of the earth; and perhaps, alas, at this moment, some unhappy ship is dragged into the abyss, by the violence of the storm. The winds roar above it, and a gulph is underneath, and all around it, the waves of the sea rise mountains high. Alas! in what distress are those unhappy people! How they wring their hands! How they shudder at every wave that rises to bury them in the deep! Before the fury of the tempest abates, there may be some thousands of families ruined; and more still, who will be plunged into the greatest misery, by the death

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of their relations and friends. But, why does the wise and beneficent Sovereign of the world thus permit the winds to spread terror and destruction by sea and land? Mad question! What temerity to dare judge and censure the government of a Being infinitely wise! Ought we not rather to reflect on his ways with respectful silence, and be persuaded they are always full of goodness? If whirlwinds and tempests make terrible ravages; if they shatter ships, or plunge them whole into the bottom of the sea; if they overthrow buildings, and destroy men and animals; have we a right, for that reason, to blame the government of the Lord?

They who calculate with so much care the mischief this element occasions, have they reckoned the advantages which accrue from it? Audacious mortals! Admire and adore the Sovereign of the world, who can even make storms contribute to the good of the universe. It is, in reality, by the particular direction of Providence, that, towards spring, storms and tempests usually arise. At the return of that fine season, the moist and mild air opens the earth, which had been closed all the winter. By this change of temperature, the air, which the cold had purified, is again filled with hurtful vapours. Plagues and epidemic disorders would soon destroy men and animals, if the air, by being agitated with storms, was not restored to its purity and wholesomeness. By that means, not only the vapours, which would otherwise stagnate, are put in motion, but also vapours of different natures being violently agitated, in every sense, it makes a happy mixture, more healthful to mankind, and more fruitful for the earth. Is it not, besides, a great advantage, that the winds serve, in some degree, as wings for the ships; and that these floating houses, laden with the riches of different parts of the world, can often, in less than twenty-four hours

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make a passage of more than fifty miles? Thus, even in the midst of storms and tempests, the Lord is Benefactor to his creatures. Every time I hear the winds roar above me I will acknowledge his goodness, and think, with grateful recollection, on the wisdom of his government. How admirable are his ways, even in respect to whirlwinds and storms! Thou, O Lord, takest the winds out of thy treasures: Thou bringest them from the extremities of the earth: Thou appointest the course they are to take: Thou settest bounds to them, and orderest them to be calm, when they have fulfilled thy designs:—Wherefore, then, should I be terrified or alarmed, when thou directest those ministers of thy will to execute thy orders? O my soul! though even the tempests should blow around thee, the rocks be rent, though a veil of darkness be thrown over all nature, and the earth should tremble, let nothing fright or disturb thy tranquillity: trust in the Lord, and rest thy cares on the fatherly bosom of him who rules and governs the universe. He who directs the stars and winds, the course they are to run, can he not point to thee a path in which thou mayest walk securely? However stormy, then, my life may be in this world, does it become me to murmur at it, or to fear? No. That God who imposes silence on the most impetuous winds, can easily put a stop to the tempest of sorrows which threatens to overwhelm me; and, when the violence of afflictions shall have sufficiently tried me, I may behold a serene, bright day, and enjoy a perfect calm. Alas! how many, who are now crossing the sea for the good of society, are struggling with the waves, in trembling expectation of being in a moment swallowed up. I imagine their distress, while, safe at home, I listen to the roaring of the tempest.

Sovereign Disposer of all events, Ruler of the

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winds and seas, deign to hear the prayers they offer unto Thee in their distress.

MARCH V.

The Aurora Borealis.

ONE often sees in winter, towards the spring equinox, a sort of transparent, bright, and variegated clouds in the sky. From the north there appears a splendid light, which comes close to the other clouds. Lastly, from these northern clouds, there dart white rays of light, which reach to the zenith. This ethereal phenomenon, called Northern Lights, or Aurora Borealis, is still, in some respects, one of those natural effects, the cause of which cannot be very exactly determined. Some naturalists suppose it to be a magnetic substance, which, accumulating and thickening towards the north, may shed a certain light at a distance. Others think, what is more probable, that the Aurora Borealis is occasioned by nitrous and frozen particles, which, rising in the air, and joined to the vapours and to the fat and oily exhalations sent forth by the whales, and other immense cetaceous fishes, which abound in the north, are lighted up, and made brilliant by that light, which the Lapanese almost continually enjoy. Lastly, some philosophers pretend, that this phenomenon is only the atmosphere inflamed, and a storm not yet come to maturity. The uncertainty in which the best informed and most learned men are, in respect to this phenomenon, is very instructive to us. How many things do we see in the air, in the sky, and upon the earth, which are still mysteries, even to the very best naturalists? These phenomena ought to humble the human mind, whose pride, and vain curiosity often prevent ac-

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knowledging how limited its faculties are. A thousand inconsiderable things confound the most learned in their meditations, and escape our enquiries. There are a thousand objects, which, indeed, we acknowledge to be planned with much wisdom, and to be very useful; but we seldom arrive at discovering their true principles, their purpose, their connection with the corporeal world, and its several parts. However, this ignorance does not affect our happiness; and though, for example, we cannot exactly determine from whence the Aurora Borealis proceeds, we can live quietly and well without it. After all, ignorant as we may be on this point, and a number of others, we know, at least, that every phenomenon of the physical and intellectual world happens only by the will of an allwise, almighty, and perfect Being, who directs them for the good of the universe. We have no occasion to know more, in a life so short as ours; and this is, doubtless, sufficient to induce us to adore and bless him, who is the Author of things so wonderful, and so much above our comprehension.

But I ought also to bless thee, O my God! for not having been born in those superstitious and ignorant times, when whole nations were thrown into consternation and terror by these phenomena. This magnificent sight painted to their disturbed imagination whole armies, and battles fought in the air; and they drew most dreadful prognostics from them. The Aurora Borealis was to them a prophet, which foretold, sometimes war, sometimes famine, and sometimes epidemic disorders.

But, for my part, I find in the mild and majestic splendour of this light, a sign of the power and goodness of God. I behold those celestial lights without fear; because I know that the Lord of heaven has not created any thing to be a torment and misfortune to his creatures. And, perhaps,

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there are people in the northern countries who draw great advantages from these phenomena, though they so little influence ours.

MARCH VI.

The Extreme smallness of certain Bodies.

THE vaulted sky, the depths of space, and its unlimited extent, those vast bodies which shine in the firmament, the variety of creatures which cover our globe, and which fill the air and the water; all these declare the glory of the mighty God, and tell us his power is infinite. But it must not be supposed that the power and wisdom of the Creator is only visible in the immense size of the world. Even in the smallest objects, in the most inconsiderable parts of the natural world, the greatest subjects of admiration are to be found. The construction of a grain of sand, seen through a glass which magnifies objects a million of times, is enough to fill the greatest mind with astonishment. Who indeed would not be surprised to learn, that there is an insect who lives in the midst of a grain of sand, which the eye can scarce discover? Examine also with a microscope, which magnifies some millions of times, the mould of a bit of bread; you will see in it a thick forest of fruit-trees, the branches, leaves, and fruit of which are easy to be distinguished. But even in your body, you may perceive objects of inconceivable smallness, which, perhaps, you have not yet taken notice of, and yet deserve all your admiration. It is covered with an innumerable multitude of pores, of which the naked eye can only distinguish a small part. The epidermis resembles the scale of a fish; it has been calculated that a grain of sand would cover 250 of those scales, and that one single

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scale would cover 500 of those interstices, or those pores which give passage to the sweat and insensible perspiration. Have you ever reflected on the wonderful construction of the hairs of your head; as inconsiderable as they appear, they are one of the Creator's master-pieces. They are hollow tubes, each of which has its root, a substance full of marrow, and several little threads which unite them. In that whitish matter, that scale which food leaves upon teeth, and which settles there (by means of a microscope magnifying one million of times), a great number of little animals have been discovered; and it has been found that, in a space not larger than a grain of gunpowder, there was a million of those animalcula.

Are not these so many circumstances that ought to make us humble in our own eyes, and raise our ideas of the Supreme Being? Every thing ought to convince us that there are a thousand objects in nature, which are to us impenetrable mysteries; that there remain a thousand discoveries to be made; and that things which are not entirely unknown to us, we still know but superficially. There are, perhaps, a multitude of wonders in our own bodies, which no one has thought of, or suspected. How many imperceptible objects may there not be in nature, out of the reach of the microscope, and of our understanding, which, if known to us, would afford new proofs of the greatness of God? But the little we know is more than sufficient to convince us, that, in small things, as well as in great, the power, wisdom, and goodness, of the Lord is manifested most admirably. The sand of the sea declares the glory of the mighty God, as well as the expanse of the heavens, the splendour of the sun, or the fury of the tempests. The lowest worm bids us give glory to its Creator; the trees, in the magnificence of their clothing; the grain

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and the seeds, in their minuteness, cry aloud with one voice, It is God who hath made us; glory be to our Creator! Even the most diminutive creature upon earth reminds us of his greatness. I admire thy power and wisdom, Lord, in the formation of the gnat, as much as in the construction of the elephant: in the humble form of a blade of grass, as in the majestic height of the oak; in a grain of sand, as well as in the highest mountain. No creature thou hast formed can be unworthy my attention. Who can tell, if the object of the most insignificant appearance may not contain the greatest wonders? A being that God hath vouchsafed to form, is it not, from that very circumstance, worthy my observation?

MARCH VII.

Winter gradually subsides.

THE same wisdom which, at the beginning of winter, caused the cold to come on gradually, has ordained that it should diminish also by degrees; so that this severe season now draws insensibly towards its end. The sun already stays longer above our horizon, and reflects more heat upon the earth. Flakes of snow no longer cloud and darken the atmosphere. The nights are now only attended with a white frost, which vanishes with the mid-day sun. The air becomes serene. The fogs and vapours disperse, or fall in fertile showers of rain. The earth becomes lighter, more moveable, and fitter to receive moisture. The seeds begin to shoot. The branches, which appeared dead, begin again to bud; and some blades of grass venture to spring out of the earth. We see the preparations which nature is making, in order to restore verdure to the fields, leaves to the trees, and flowers to the gardens. She

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silently labours to bring back spring, though the storms, the hail, and frosty nights, still oppose it in some measure. She will soon lose her sad, gloomy appearance; and the earth will shine again in all the beauty of youth. Every change in nature is made thus gradually. Every effect which we perceive has been prepared by preceding effects, and a thousand little circumstances, which escaped our observation, succeed one another, till the end which nature proposes to herself is fulfilled. An infinite multitude of springs must be put in motion, before a single blade of grass can shoot, or a bud can blossom. All the changes in winter, so disagreeable to us, must necessarily take place, in order to open to us a promising prospect. Storms, rain, snow, and frost, were essential, that the earth might rest and recover its strength and fertility. Neither could these changes happen sooner or later, be more or less sudden, or last longer or shorter, without injury of some sort to the fertility of the earth. Now, that the advantages of these plans of nature open insensibly to us, we acknowledge her designs; and the happy consequences of the winter plainly demonstrate that it is a real blessing to the earth.

As the seasons, so do the periods and events of our lives continually vary. In that of every man there is so admirable and mysterious a chain of causes and effects, that nothing but futurity can discover to us why such and such events were necessary and beneficial. I see, perhaps, at present, why God caused me to be born of such parents rather than others; why precisely such a town should be the place of my birth; why such and such unhappy accidents happened to me; why it was necessary I should embrace such a kind of life, and no other. All this was then concealed from me: but now I comprehend that the past was necessary for the present, and for the

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future; and that several events, which did not at all seem to agree with the plan of my life, were however indispensible, to make me as happy as I now am. I also gradually approach the moment in which all the events of my life will be laid open and explained. Perhaps I am very near the period wherein the winter of my life will draw to its end, and I shall be on the point of entering a new world. O my God! grant that my heart may then be full of hope and joy. And, when all the visible creation disappears from my sight, grant me a glimpse of a blessed eternity; and give me a foretaste of it, which may raise me above every thing earthly and perishable.

MARCH VIII.

The Human Body relatively to its exterior Parts.

NOW, that nature does not yet appear in full beauty, while the fields and gardens afford no charms to unbend my mind agreeably, I will meditate on myself, and reflect on the formation of my body. It will furnish me with the best opportunity of acknowledging the power and wisdom of God; and I shall learn, at the same time, to be sensible of the value of my life.

Of all the visible parts of the body, the head holds the first rank, not only from its beauty, but because it contains the principles of sensation and motion. All the sentiments and passions of the soul are painted on the face, which is the most beautiful part of man, and wherein are placed the organs of the principal senses, by means of which we receive the impression of outward objects. The several motions of the lips and tongue, whether they touch the palate or the teeth, serve for articulation, and enable us to

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give so many different inflections to the voice and to sound. With teeth we can either eat or grind our food, and the great number of glands in the mouth furnishes the saliva necessary for digestion. The head is placed on the neck, where it moves different ways, as on a pivot, in order to turn to which side it pleases. After the neck come the shoulders, so formed as to bear heavy loads. To the shoulders are fastened arms, and to those hands, formed in such a manner that they serve to perform many movements, to touch, to take, to raise, to push away, &c. and the joints and bones support and facilitate the motions. The chest contains and guards the heart and lungs, and for that purpose is composed of hard, strong ribs and bones. The midriff separates the chest from the belly, which contains the stomach, the liver, the spleen, and the intestines. All this mass rests upon the hips, the thighs, and the legs, which, as well as the arms, have several joints to make the motions easy. The feet support the whole; and the toes also contribute to it, as they serve to fix the foot firm on the ground. The flesh and skin cover the whole body. The hair of the head, and the down on other parts, guard from the bad effects of cold. What variety in these exterior parts of the body, and yet they are only the principal and most essential of them. Their form, construction, order, situation, motions, and harmony, all afford incontestible proofs of the wisdom and goodness of our Creator. No part of the human body is imperfect or deformed; none useless; no one hurts the other. If, for example, we were deprived of the use of our hands, or if they were not provided with so many joints, we should be unable to do many things we do. If we were to preserve our reason, and yet be quadrupeds or reptiles, we should be unfit for arts or trade; we could not act, move, or turn, as we wished.

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If we had but one eye in the middle of our foreheads, it would be impossible so see to the right or left; to take in so large a view, or distinguish so many objects at a time. In a word, all the parts of the body are so constructed and placed, as to concur to the beauty and perfection of the whole, and are well adapted for their different purposes.

Let us, therefore, bless our Creator, who has made us so wonderfully: and, while we feel the happiness of our formation, let the sense of his goodness never be effaced from our minds.

MARCH IX.

The Hope of Spring.

EVERY day draws us nearer to the pleasures of spring, and gives us hope of the time approaching, in which we may breathe more freely, and contemplate nature with more satisfaction and joy. This sweet expectation is almost the only one which does not deceive us, being founded on the invariable laws of nature. The charms of this hope are felt in every heart, without distinction; for the beggar, as well as the monarch, may behold the spring approach with pure joy, and promise himself sure pleasures in it. This hope is not attended with impatience, because it extends very far, and takes in a multitude of objects.—The coming of spring procures us a thousand new pleasures: the beauty and perfume of the flowers; the singing of the birds; and every where the cheerful prospect of mirth and pleasure. Most earthly hopes are attended with anxieties; but that of spring is as satisfactory as it is innocent and pure; for Nature seldom deceives us. On the contrary, her presents generally surpass our expectations, both in number and quality. Let

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us, therefore, in these boisterous March days, give ourselves up entirely to the sweet hope of spring, and the joy it inspires. It is a great blessing of Providence, that, in all the changes of seasons, and the vicissitudes of life, we can still nourish hope in our hearts. Winter, which now draws near its end, would have been infinitely more melancholy without this comfortable prospect. Encouraged by the hope of spring, we have patiently borne the inconvenience of cold and bad weather, and are now on the point of seeing that hope abundantly realized. A few more disagreeable days, and the sky will become serene, the air milder, the sun will revive nature, and the earth will re-assume its ornaments.

O most merciful God! I return Thee thanks for these sources of joy and comfort which Thou hast opened to us, to soften the evils of life. With what goodness throwest Thou a veil over the future evils which are to happen! while, on the contrary, Thou givest a distinct view of the blessings and pleasures designed us. Without hope, the earth would be a vale of misery, and our lives a series of sorrow and pain. But Thou hast given us hope, as an agreeable companion through our pilgrimage. When all around us is gloomy, it opens for us a cheerful prospect of futurity, which revives, and enables us to walk with content through the sorrowful paths of life. How often, O heavenly Father! hast Thou not thus raised my dejected heart, and strengthened my courage when ready to fail me? I bless Thee for every ray of hope which has animated my soul; for every blessing received, and for all those hereafter reserved for me. What words, indeed, can express the great hopes I may indulge as a Christian? Praised be thy mercy, O Divine Redeemer! which has entitled me to hope a felicity not confined within the narrow limits of this life. Praise be to Thee for the blessed hope Thou hast given

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us of eternity. What would this life be without it! What would be the happiness of this world, if we could not enjoy the delightful hope of everlasting life, of eternal happiness! Since we have this glorious hope, ought we not to reckon as nothing the evils of this world? What matter how long and severe the winter of our lives? Let us hope for spring. Let us await the renewal and perfection of existence in the world to come.

MARCH X.

The White Frost.

IT is very usual, at this season, for the bushes, and other things exposed to the open air, to appear as if they were covered with sugar. The hoar or white frost is only frozen vapours, which lose their fluidity from the bodies they touch. There falls a dew every day, however imperceptible it may be. It is heat only which can render it fluid, but it is very easy for a body to lose its warmth, particularly when it is thin and delicate, and happens to touch bodies much colder than itself. In the cold nights of spring, the bushes must lose more heat than thicker branches. It is consequently natural that the little twigs should be covered with frost when the others are free from it. When the dew fixes on bodies considerably colder than itself, it communicates its heat to them immediately; and, of course, the dew, having lost the cause of its fluidity, its parts connect, draw close, and form a light coat of ice. If to those vapours ready to freeze, there join others not yet so, the latter instantly lose their fluidity, and settling irregularly on the former, or near them, altogether form what is called the hoar-frost. It is therefore easy to comprehend, how it sometimes happens that our hair, and the

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hair of animals, is covered with frost. The perspiration and exhalation of the mouth and nose, if they settle on hair, and are exposed to the cold air, occasion this sort of congelation. It is in the same way that we can account for the shining threads often seen in winter on buildings. If the walls are cold to a certain degree, the watery vapours which are settled on them, condense and freeze. But when the cold is extreme, and it freezes hard, this effect does not follow, because the vapours are already frozen in the air; and supposing even that they light upon the wall, they cannot remain there, because they only touch it with some of their parts. However, it sometimes happens in hard frosts, that the walls become white as if covered with snow; but it is a certain proof that the severity of the cold is going to abate. Here, again, let us acknowledge the wise and beneficent views of our Creator. In his hand, and under his direction, all the effects of nature, at every season, tend towards the general good and the fertility of the earth; and since every phenomenon, in each link of the great chain of creation, contributes to the perfection of the whole, is it not reasonable to acknowledge the minutest parts, and to celebrate, with grateful hearts, every blessing he bestows upon us?

MARCH XI.

Variety of Means which contribute to the Fertility of Nature.

THE wisdom of Providence makes use of several means to render the corporeal world fruitful. Sometimes the clouds fall in rain, in order to purify the air from hurtful vapours, to soften the earth, and give it new nourishing juices. At other times, when the earth is deprived of the

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blessings of rain, a soft dew moistens and renders the earth fruitful, and revives the feeble plants ready to wither. God has ordained that each season should have peculiar means of enriching the earth. The snow, which in winter covered our fields and meadows, not only served to guard the earth from the severe cold, but, by means of the salts with which it is mixed, contributed also to the fertility of the land. The frequent storms that are felt in spring preserve the air from corruption, dry the earth, and disperse the rain over the whole surface of the globe. What benign influence have they also upon the earth in making it fruitful, though, during summer, they excite the terror of timid and fearful people! With every thunder-shower the Creator spreads his precious blessings on the earth. One may, without extravagance, maintain with certainty, that there is no revolution in the air, or on the earth, which does not, directly or indirectly, contribute to the fertility of our globe. Each season brings back the phenomena peculiar to it; and each phenomenon of nature produces effects, the happy influence of which is more or less visible. Even those plagues, which cause the entire destruction of certain countries, are only particular evils, which contribute to fulfil beneficent views, as there result from them advantages to the world, when considered in the whole.

In all times and places I acknowledge thy tender care, and the effects of thy mercy, O all wise and beneficent Creator! Lord of all times and seasons! Thy praise rises from the orbit of the earth up to the heaven of heavens! Our globe rolls in the starry space, sometimes sown with flowers, sometimes covered with snow; here adorned with vines, there crowned with ears of corn. It sings thy praises, and joins its notes with the harmony of the spheres. When the snow and ice change our fields into deserts; when the tempest roars in

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the winds; when thy lightnings make mortals tremble; when the rivers, leaving their beds, overflow countries; when all the elements seem to conspire the destruction of the world; it is then that thou preparest for the inhabitants of the earth health, joy, peace, and plenty.

Here I represent to myself the different means by which (if I may use the expression) God renders the moral world fruitful. In order to lead mankind to a sense of their destination, to a horror of sin, and to the practice of virtue, God sometimes makes use of violent, and sometimes of mild methods. Sometimes he thinks proper to punish the sinner severely, to lay heavy judgments, and of a long duration, upon him, in order to awaken him from his slumber. He speaks to hardened hearts, as to the Israelites on Mount Sinai, with lightnings, as with a voice of thunder. With others he makes use of opposite measures: he endeavours to snatch them from vice and vanity, and to draw them to him by the gentle ways of blessings and goodness. I am of this a living witness; and I acknowledge, O Lord! to the praise of thy mercy, that thou hast done every thing to lead me to Thee. Sometimes it has pleased Thee to lay thy heavy hand upon me, and to humble my pride with chastisement. Thou hast sent me sickness, and other misfortunes, to lead me to reflect upon my errors. At other times, Thou hast endeavoured to draw me by milder ways: thou hast loaded me with blessings; and thy mercies, like the refreshing rains of spring, have fallen abundantly upon me. But what hast Thou obtained from me, in giving me so many means of grace? Have I borne the fruit which a good soil never refuses when the sky is favourable to it? Alas! my heart was like a rock which no thunder could move, no rain could soften. Hitherto most of the means Thou hast used have been fruitless: but will they always be so? No. It is time to be

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more docile, more obedient. The longer I defer my repentance, the more my sins and follies will increase, and the more difficult it will be to banish them from my heart.—I ask but one favour, O my God! it is, that Thou wilt never cease to assist my conversion. Thou mayest either intimidate me by threats, or encourage me by thy promises; lead me to Thee by the rigours of punishment, or by the persuasion of mercies. I bless, before hand, all the means of salvation Thou mayest choose: only grant that I may return to Thee, and become fruitful in good works.

MARCH XII.

The Advantages the Sea procures us.

A SUPERFICIAL glance cast on our globe might give reason to think there is not a just proportion of water and of land. At first sight it appears as if the immense quantity of water, which takes up so great a part of it, was inconsistent with the idea we ought to have of the Divine Wisdom and Goodness. We fancy it might be more advantageous, if the Creator had changed into firm land the enormous space which comprehends the ocean, the seas, the lakes, and rivers. But in this, as in a thousand others things, we only shew our ignorance and want of judgment.

If the ocean was reduced to half what it is, it could only produce half the vapours it exhales; consequently, we could not have so many rivers, and the earth would not be sufficiently watered: for the quantity of the waters which rise is in proportion to the surface of the sea, and the heat which draws them. Thus the Creator has wisely ordained, that the sea should be large enough to furnish the necessary vapours for watering the

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earth, which would not have been possible, if it had filled a less space. The sea, then, has been made a general reservoir of the waters, in order that the heat of the sun should draw vapours from it, which afterwards fall in rain, or, when they gather at the tops of mountains, become sources of rivers. If the extent of the sea was more confined, there would be many more deserts and barren countries, because there would fall less rain, and there would be fewer rivers. What would become of the advantages which result from commerce, if that great heap of water did not exist? God did not design that one part of the globe should be totally independent of the other. On the contrary, he designed that there should be intercourse among all the people of the earth. It was for that purpose he intermixed it with seas, in order to open a communication between those at the greatest distance from each other. How could we bring over our riches and treasures, if we had no other means but horses and carriages? How could commerce go on, if navigation did not open unto us the easiest way: in this division of water and land on our globe, I can see a new proof of the wisdom and goodness of the Creator. However distant I may be from the sea, I daily experience the happy effects of it.

Oh! why are we not still more grateful to God for this blessing! The knowledge of his adorable attributes, which the earth and seas impress upon us, ought it not to excite us to glorify his holy Name? Yes, Lord, my heart is disposed to render the thanks due unto Thee; assist me, by thy Holy Spirit, that my gratitude may be acceptable to Thee. Perhaps I am not as sensible of this blessing as I ought. Other people, possibly, feel the value of it more than I do. But, were not any people to remember thy mercies, the sea itself would bear testimony of thy power, and be

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the herald of thy wondrous goodness: for all thy creatures, the sea, the earth, and all its inhabitants, celebrate thy praise.

MARCH XIII.

The Difference between Animals and Plants.

THE difference between animals and plants is so great, and so visible, that it requires but a very slight observation to be convinced of it. Undoubtedly, one remarkable difference consists in the animals having the faculty of moving and changing place, a faculty of which the vegetables are totally deprived. A much more essential difference is the faculty of feeling, which cannot be denied to animals, while it cannot be granted to plants. To this must be added, the manner of being nourished, which is still another distinction between them. Animals, by means of exterior organs, are capable of choosing their proper food; plants, on the contrary, are obliged to take what nourishment the earth affords, without any choice. This is given them from the moisture of the earth, and by the action of the veins in the leaves, which pump and draw in the nourishing juices with which the air is filled. The number of species is much greater in the animal than in the vegetable kingdom. In the insects alone there may, perhaps, be a greater number of classes (taking in those which can only be seen with a microscope) than there are of visible plants on the surface of the globe; neither have the animals such conformity with each other as the plants have, whose resemblance makes it difficult to class them. Another circumstance, which marks the difference between the two kingdoms, is the manner in which they propagate, very distinct from each other, notwithstanding the accidental similarity

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found between them. Who can avoid observing another remarkable difference, as to the place where they live? The earth is the only place where plants can grow and multiply; most of them rise above its surface, and are fastened to the soil by roots more or less strong. Others are entirely under ground. A small number grow in the water; but, in order to live, it is necessary they should take root in the earth. Animals, on the contrary, are less limited in place. An innumerable multitude people the surface and the interiof parts of the earth. Some inhabit the bottom of the sea. Others live in the waters, at a considerable depth. Many live in the air, in vegetables, in the bodies of men and animals, in fluid matter, and also in stones. If we consider animals and plants, in respect to size, we shall find still a striking difference. Between the size of a whale and that of a mite, the distinction is much greater than between the highest oak and a bit of moss. Lastly, it is particularly in the form of animals and plants, that the general and most striking difference subsists. Most of the latter have, in that respect, so distinct a character, that it is impossible to confound them with vegetables. However, let us not imagine we have perfectly discovered the limits which divide the animal from the vegetable kingdom, or that we have found out all that distinguishes them. Nature, to diversify her works, makes use of almost imperceptible shades. In the chain of beings, perfection increases successively, and rises by millions of degrees, so that a more perfect species differs very little from that which preceded it. How narrow are the bounds which separate the plant from the animal! There are plants which appear sensible, and animals which seem deprived of sensation. Nothing proves this better than the discoveries made in coral. Formerly it was supposed that corals were sea plants, but now

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there are strong reasons for placing them among animals; for, what was then taken for a flower, has proved to be really an animal. Thus every order of creatures rises insensibly to perfection, by numberless degrees. The more observations are made, the more reason is there to be convinced that it is impossible to fix the exact limits of the three kingdoms, the mineral, the vegetable, and animal; and that amongst most creatures there is more conformity than dissimilarity. It is at least certain, that the limits which divide the most perfect creatures, from those that are a degree less so, become at last imperceptible to understandings so limited as ours. These observations ought to convince us that the world, with all the creatures it contains, is the work of an infinite Being. So much harmony and such differences, so much variety with so much uniformity, can only proceed from the Almighty, omniscient, and perfect Being, who created the universe, and all that is in it. Let our hearts rise towards him. Let us go from the stone to the plant, from the plant to the brute, from the brute to man, and from man to the heavenly spirits; then take our flight towards the everlasting, incommensurable Being, the Creator of the world, the Preserver of plants, the Protector of animals, the Father of mankind, the King of spirits.—Measure, if possible, measure his greatness, and try to sound the depths of his wisdom. Thrice holy God! created beings are too weak to know thy works. They are immense: and to tell them all, would be to be infinite like Thee. Therefore, the less capable we are of conceiving how far the wisdom of God extends, the more we ought to reflect on his greatness! and, above all, to imitate his goodness as much as is in our power. We see that no creature is deprived of the merciful care of the Lord. It is extended to the stone and the plant, as well as to men and animals. In his sight (in some

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respects) there is no distinction: his mercy is over all his works. Let us, in this also, endeavour to imitate our Maker. We fill, it is true, a distinguished rank among created beings; but let us take care not to be cruel or tyrannical towards creatures who appear to be inferior to us. Let us rather endeavour to enjoy, with gratitude and moderation, all those designed by God for our use.

MARCH XIV.

The Uniformity and Variety in the Works of Nature.

THE sky over our heads, and the earth under our feet, remain always the same, from age to age; and yet they afford us, now and then, spectacles as varied as they are magnificent. Sometimes the sky is covered with clouds, sometimes serene, sometimes blue, and sometimes of different colours. The darkness of night, and the light of noon day, the dazzling light of the sun, and the paler light of the moon, succeed each other regularly. The immeasurable space of the heavens appears sometimes a desert, and sometimes strewed with an infinite number of stars. To how many changes and revolutions also is our earth subject? For some months uniform, and without ornaments, the severity of the winter robbed it of its beauty; the spring renews its youth; summer will shew it still more rich and beautiful; and, in some months after, autumn will pour upon us every sort of fruit. What variety also on our globe between one country and another! Here, a flat level country presents us plains beyond the limits of sight; there, high mountains rise crowned with forests; at their feet fertile valleys are watered with brooks and rivers. Here gulphs and precipices; there still lakes; and, far-

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ther off, impetuous torrents. On every side is seen a variety which pleases the eye, and opens the heart to sensations of pure and sweet delight. This same assemblage of uniformity and variety is found in all the vegetables on our globe. They take from their common mother all the same nature, and the same food: they have all the same manner of springing up and growing: yet, what a prodigious difference between a blade of grass and an oak! All together are ranged under certain classes. Those of the same species are indeed very like one another; and yet what differences we see in them! It is the same in respect to animals. The wisdom of the Creator has divided them also into classes; and whatever variety there is in them, they still preserve essential resemblances. There is even a certain degree of conformity between man and the lowest class of animals. However superior man may be to animals in many respects, has he not, in common with them, and even with plants, the same means of food? Is it not the sun, the air, the earth, and water, which provides it for them all alike? The plants grow, ripen, fade, and die; and those laws of nature extend to animals, and even to mankind. If we next examine the variety of the human species, what an astonishing assemblage of conformity and diversity! Human nature, in all times, and among all people, is ever the same; and yet we find, that, of this innumerable multitude of men spread over the earth, each individual has a form peculiar to himself, particular talents and countenance, which, to a certain degree, serve to distinguish him from any other. It seems as if the wisdom of the Creator chose to vary, in the highest degree, all his works, as far as was compatible with the essential construction peculiar to each species. All the creatures on our globe are divided into three classes, minerals, vegetables, and animals. These classes divide into

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kinds; the kinds into numberless sorts of individuals. From thence it is, that there is no creature on earth alone, or without resemblance to its own species. There is no species which has not some connection with others, or a general affinity with the rest of the world. From this assemblage of uniformity and diversity (which is of infinite extent) derive the order and beauty of the universe. The difference between the countries of our globe proves the wisdom of the Most High, who chose that each being should have its certain place, and has so fixed their destination, that it would be impossible to change the connection or distinction he has made between them. Even the minutest works of nature, such as only can be seen through a microscope, discover such union and variety together, as must necessarily raise our souls to the contemplation of the infinite wisdom of the Creator.

MARCH XV.

Seeds.

ALL vegetables spring from seeds; but the greater number of these are not sown, and are even invisible to us. It is nature that disperses them. With this view, she has furnished some seeds with a sort of light down, or little feathers, which serve as wings for the wind to carry them away, and spread them every where. Other seeds are small and heavy enough to fall perpendicularly on the earth, and to sink themselves into it. Others, of a larger or lighter sort, which might be carried away by the wind, have one or more little hooks to catch and prevent them from going too far from their place. There are some inclosed in elastic cases, which (as soon as they are touched, or acquire a certain degree either of dryness

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or moisture) are driven or cast to more convenient distances. And, what is still more admirable, is, that nature seems to have given to some birds the care of planting trees. They sow the nuts, which afterwards shoot and grow. Ravens have been thus sent to plant oaks: and this is their method: they make a hole with their bill, and drop an acorn into it, which they afterwards cover with earth and moss. It must not be supposed they do all this with an intention to plant trees. It is instinct alone which prompts them. They bury the acorn for their food. It shoots, and becomes an oak. Many seeds, by their agreeable taste and smell, invite the birds to swallow them; and thus transport them here and there, and render them fruitful by the heat of their bowels. After having kept them some time on their stomachs, they let them fall on the ground, where they take root, shoot, blossom, and produce new seeds.

Let us here admire the wise and tender care of Providence. If the sowing of seeds in meadows and forests had been entirely left to mankind, in what a bad condition would they be! Observe, how, at the return of spring, the grass and flowers spring up, and adorn the earth, without our having in any degree contributed towards it. Tender and merciful Father! how great is thy love towards thy creatures! and how admirable is thy wisdom! But this is not all that is to be admired in respect to seeds. It is remarkable that the whole plant, however great it may be, is all concealed in the narrow space of the seed. The whole trunk of the oak, its leaves, branches, and root, are already in the acorn. As the preservation and propagation of all species depend greatly on the seed, the Creator has taken care to protect it sufficiently. The plants which remain all the year in the ground, how carefully are their blossoms and seeds inclosed during winter in the buds, where they are well protected, and covered with

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close coats of curious texture. As for those plants which cannot bear the cold of winter, they are preserved under ground by their roots or fruit, till the mild warmth of spring makes them bud again. Some seeds are lodged in the middle of the fruit; others in pods and shells, and some in wooden cases and cods. But every seed is protected and preserved in the manner most suitable to its nature. Every where we may trace the Divine Creator. The minutest works of nature prove his wisdom and goodness.

MARCH XVI.

Of the Size and Distance of the Sun.

IF we had never been thoroughly sensible of the extreme smallness of our globe, and our own nothingness, perhaps we should feel it in a strong manner, by reflecting on that immense body which communicates light and heat, not only to our earth, but also to a multitude of other worlds. The sun is almost in the centre of the planetary system, and, in some degree, monarch of sixteen worlds; for the six planets of the first magnitude, and the ten secondary planets, are only worlds, which receive their light, heat, and inward motion, from the sun. This alone is sufficient to prove the prodigious size of it, which is still more confirmed by its being visibly great, notwithstanding the immense distance it is from us. But there can remain no doubt, if we admit the calculation and measures of astronomers; the result of which is, that the diameter of the sun is at least an hundred times larger than that of the earth; and consequently the globe of the sun must be at least a million of times larger than ours. The astronomers vary in opinion as to its distance: but, in drawing a line between the greatest and least

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that they suppose, it must be twenty-two thousand half diameters of the earth. Now, the half diameter of the earth is eight hundred and fifty German leagues. This diameter is perfectly suited to the effects of the sun, and its influence upon us. Some planets are nearer to it: but if our earth were in their situation, it would be reduced to ashes. Other planets are so far from it, that if our globe was at an equal distance, it would be enveloped in a frightful and perpetual darkness, and would not be habitable. We have reason, however, to believe, that those worlds which are more or less near the sun than we are, have been adapted by the Creator for inhabitants. Either their constitution or their atmosphere being different from ours, or the inhabitants, being of another nature, are enabled to support the extremes of heat and cold. But, perhaps, what has just been said of the size and distance of the sun may appear exaggerated. For our eye sees nothing so large as the earth we inhabit. It is to that we compare the sun, which is a million of times larger. It appears small to us at such a distance; and from thence we are tempted to believe our eyes rather than our reason. If God had placed us on a planet, which, in comparison of the earth, was as small as the earth is in comparison of the sun, the size of the earth would appear as improbable to us as that of the sun does. It is not wonderful, then, that we should be struck with astonishment, in reflecting on the size and distance of that body. But it was not merely to excite our admiration, that God placed it in the heavens. This admiration ought to make us look up to the great Being, who is the Creator, the Guide, and Preserver of the sun. In comparison of his greatness, the greatness of the sun is but a speck; and its brightness but a shadow, compared to the dazzling splendour of the Lord.

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What must be the greatness, the power, and glory of him who created the sun? Let us try to pursue this idea; let us dwell on it; and we shall find it infinitely more incomprehensible than the size of the sun. If the earth is so small, in comparison of that globe of fire, how inexpressibly little must it be in comparison of the Lord? If there is such immense space between the sun and earth, what an inconceivable distance must there be between us and infinity! "Who is like unto thee, O Lord! Who can be compared to Thee! No praise can equal thy greatness: no understanding, however sublime, can reach that height. O Thou, the life and light of every being! splendour, majesty, and glory, surround Thee. Thou deckest thyself with light, as it were with a garment." Let it be our constant employment to praise the Lord, every time we feel the salutary effects of the sun, which is the master-piece of his hands. Let this testimony of the greatness of God, which we every moment feel, teach us how worthy he is to be adored; how tender the mercies with which he watches over us; and how greatly he merits our whole love and confidence. But, in admiring the sun, let us not forget to think of our Divine Redeemer, that Sun of righteousness, who visited us in our distress, and whose light brings us health and salvation. The effects of his grace are as necessary to our salvation, as those of the sun are to our natural life. We should be plunged into a night of the greatest obscurity, into a night of sin and despair, if he had not, by his blessed redemption, brought light, consolation, and righteousness into the world.

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MARCH XVII.

The imperfect Knowledge we have of Nature.

WHY has not the Creator given us faculties for a more profound knowledge of the corporeal world? The limits of our understanding, in this respect, seem to be directly contrary to the end that he has proposed. He requires that we should know his perfections and magnify his Name. But the true means of being better acquainted with his glorious attributes, and to magnify them more worthily, would it not be by giving us a more perfect knowledge of the works of the creation? It appears to me, as if I could so much the better admire the greatness of the Supreme Being, and contribute so much the more effectually to the glorification of his holy Name, if I were able to take in the whole, to know the perfection of each part, to discover all the laws and springs of nature. If I at present admire the infinite greatness of God, while I only know a part of his works, what would my sentiments be, how should I be absorbed in the meditation of his glorious attributes! With what profound veneration should I not adore him, if I could penetrate farther into the knowledge of nature, and could better explain all its springs! But, perhaps, I am mistaken in this opinion; at least, it is certain that, since God has not thought proper to give me a deeper knowledge of nature, I must glorify him in proportion to my powers, more than I should have done in the other case. Ought I to be surprised that, in my present state, I cannot discover the first principles of nature. The organs of my senses are too weak to penetrate into the source of things, and I cannot form to myself a corporeal idea of objects which [illegible] es

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are not able to discern. Now, there are an infinite number of things in the world which my senses cannot distinguish. When I try to represent to myself the infinitely great, and the infinitely small in nature, my imagination is lost. When I reflect on the swiftness of light, my senses are not able to follow such velocity. And when I try to form to myself an idea of the veins and circulation of blood, in those animals whose bodies are said to be a million of times smaller than a grain of sand, I feel, most sensibly, the weakness of the faculties of my soul. Now, as nature rises from the infinitely small to the infinitely great, is it wonderful that I cannot discover the true principles of it? But, suppose God had given us knowledge and sagacity enough to take in the whole chain of the universe, so that we might penetrate the inward recesses of nature, and distinctly discover all its laws, what would be the consequence? It is true we should have an opportunity of admiring, in its full extent, the wisdom of God in his plan of the world; but this admiration would not last long. Most men, from their inconstancy, admire things no longer than while they appear above their conception. If we had a clear distinct idea of the whole system of the creation, perhaps we should think ourselves capable of forming a plan like it. In a word, perhaps we should not be sensible of the infinite distance between the Creator and us, and, consequently, not give him the glory due unto him. We have, therefore, no reason to complain of our imperfect knowledge of nature. We ought rather to bless God for it. If the nature of things was more known to us, perhaps we should not be so touched with gratitude towards God as we are at present; perhaps we should not have so much pleasure in the contemplation of his works. But, at present, that we have only learned the first rudiments of the book of nature, we feel, not only the greatness of our Crea-

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tor, but our own insignificance. Each observation, each discovery we make, fills us with new admiration of the power and wisdom of God. We more and more wish to reach those blessed regions, where we shall have a more perfect knowledge of his works.

MARCH XVIII.

Use of Vegetables.

WHEN I consider the great number and variety of vegetables, I discover, in this circumstance, as in every thing else, the beneficent views of my Creator. What indeed could he propose, by covering the earth with so many different herbs, plants, and fruits, but the advantage and happiness of his creatures? There are so great a number, and such variety of plants, that they already reckon above thirty thousand species of them, and every day there are new species and new classes found. Their increase is infinite. For example, who would not be astonished that a single grain of wheat should produce two thousand others, and that a single seed of poppy should multiply to such a degree, that, in two or three years, a whole field might be sowed with it. Can we suppose that God had not the advantage of his creatures in view when he ordained this prodigious increase of plants? There can remain no doubt of the Creator's intention, if we consider the use made of vegetables from the remotest times. Do not plants and fruit furnish us every day with the most wholesome nourishing food? Do we not mostly owe our clothes, houses, and furniture, to the vegetable world? There is no part of plants that has not its use. The roots furnish medicaments; they serve for food and fuel, to make pitch, dyes, and all sorts of utensils. Of wood they

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make charcoal, buildings, fires, medicines, papers, dyes, and a vast number of instruments. The bark even has its utility in medicine, in tanning, &c. The ashes serve to manure and improve the ground, to bleach cloth, to make saltpetre, and they make use of potashes in dyeing. Rosin is useful to painters: pitch and tar are made of it. They make use of turpentine in medicine; hard rosin to varnish, to solder, to rub the bow-strings of musical instruments, in order to make them more sonorous; and they use mastic in perfumes. Flowers please and delight, both by their colour and smell. They serve as medicine, and are particularly useful in furnishing bees with wax and honey. The fruits, which ripen by degrees, serve for our food, and are eaten either raw, baked, dried, or preserved. But vegetables are not for the use of man alone. They are of still greater use to animals, most of which have no other food. The reason there are so many fields, and so great variety of herbs and plants, is, that all the different animals may find their proper food.

Where, O Heavenly Father! can expressions be found to celebrate thy goodness? Who can reckon all the blessings the vegetable world affords us? It is at least manifest that all the arrangements Thou hast made, in this respect, tend to the use of all thy creatures. Thou hast provided for the wants of every individual. Thou hast assigned to each the plant most proper for its food and preservation. There is not a plant upon earth that has not its purpose and use. What sentiments, therefore, of gratitude and veneration, ought we not to feel, at the sight of a country, a meadow, a field? Here thy beneficent cares have united all that is necessary for the support and enjoyment of the inhabitants of the earth. Here, O God! Thou openest thy hands, and satisfiest the desire of every living creature. Here every herb and flower, each tree that grows, teaches us thy

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mercy. I will neither be deaf nor insensible to this persuasive voice; I will relish, I will enjoy thy goodness. I will, more and more, place my whole trust in Thee.

MARCH XIX.

The Construction of the Human Heart.

WITH what wonderful and inimitable art is that musculous body constructed, which is situated in the cavity of the breast, and is called the heart? Its form is something like an obtuse pyramid, and it is so placed that the point inclines a little to the left side. Its substance appears to be a series of fleshy fibres, interwoven with infinite art, in such a manner that the external fibres extend from the left side of the heart towards the right, and the internal fibres from the right side towards the left. This intestine has within it two cavities, called ventricles, separated from one another by a fleshy partition. In that there is a vein, which conducts the blood of the upper parts of the body into the right ventricle of the heart; another which brings back the blood from the lower parts into that same cavity; an artery which sends it from thence into the lungs; another vein, through which it runs from the lungs into the left ventricle, from whence it is sent over the whole body through the great artery. On the one side of the right ventricle is a sort of musculous bag, which is called the auricle of the heart, and which receives the blood before it has entered the right ventricle. Another auricle, not less useful, hangs at the left ventricle, that the blood may stop there during a new contraction. All the blood passes through the heart. It continually goes in and out; and, by the contraction of this intestine, it is sent into every part of the human

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body, and circulates through all the veins. When even all the other members of the body are at rest, the heart is in perpetual motion, from the first moment of life to the last. In a state of health, the heart contracts itself at least 60 times in a minute, and, consequently, 36,000 times in an hour; and at each beating of the pulse it throws out about two ounces of blood. The force it must make use of to do so is not small. For, in order to throw out the blood, so that it should reach only as far as two feet in the great artery, the heart must resist a weight of nine hundred stone, and consequently in twenty-four hours a resistance of sixteen millions stone weight.

All these things are equally admirable and incomprehensible. They lead us to cry out, with wonder and astonishment, How great is our Divine Creator! Who can describe his glory!

MARCH XX.

The Change of Seasons.

IN the warmest climates, as well as in the coldest, there are but two seasons of the year really different. The coldest countries have summer about four months; during which the heat is very great, occasioned by the length of the days. Their winter lasts eight months. Spring and autumn are scarce perceptible there; because, in a very few days, an extreme heat succeeds an extreme cold; and, on the contrary, the great heats are immediately followed by the most severe cold. The hottest countries have a dry and burning season for seven or eight months. Afterwards comes rain, which lasts four or five months; and this rainy season makes the difference between the summer and winter. It is only in temperate climates that there are four seasons, really different, in the

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year. The summer heats gradually decrease; so that the autumnal fruits have time to ripen by degrees, without being hurt by the cold of winter. In the same manner, in spring, the plants have time to shoot, and grow insensibly, without being destroyed by late frosts, or too much hastened by early heats. In Europe, these four seasons are most perceptible; and particularly in Italy, and in the south of France. By degrees, as we advance towards the north, or towards the south, the spring and autumn are less marked. From the middle of May to St. John's day, it rains less frequently; after which, the violent rains return, and continue to the end of January. The months of February and April are generally very uncertain weather. If the melted snow and rains remained on the ground, without falling away or evaporating, the water would annually rise to the height of a foot and three quarters in most countries. This change of seasons deserves our admiration. It cannot be attributed to chance; for in fortuitous events there can neither be order nor constancy. Now, in every country throughout the world, the seasons succeed each other with the same regularity as the nights and days, and change the appearance of the earth precisely at the appointed time. We see it successively adorned, sometimes with herbs and leaves, sometimes with flowers, sometimes with fruit. Afterwards it is stripped of all its ornaments, till spring returns, and, in some degree, revives it. Spring, summer, and autumn, provide food for men and animals, in giving them abundance of fruit. And though nature appears dead in winter, that season is not without its blessings; for it moistens and fertilizes the earth, and, by that preparation, makes it fit to produce its plants and fruits in due season.

Awake, O my soul! to praise and bless thy God and Benefactor. It is now that begins again

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that charming season, which opens such a agreeable prospect before us, and makes amends for the sad winter days that are past. The spring approaches every day, and with a it thousand pleasures and innumerable blessings. How many have wished to live to see the renewal of nature, and to recover, in the fine days of spring, from all they had suffered during winter. But they have not had the consolation to see this day, and their lives were ended before the winter was over. More favoured than many millions of my fellow-creatures, who have been carried off by death, I still live and may indulge the joy with which spring inspires me. But how often have I seen this season, without thinking of the goodness of my Creator, without opening my heart to gratitude and love? And perhaps this is the last spring I shall see upon earth. Perhaps, before the equinox returns, I shall be in my grave. Let this thought lead me to feel, so much the more sensibly, the happiness granted me; to be the more touched with the goodness of my Creator; to enjoy, with more circumspection, the pleasures of spring; and to redeem with more care, every moment of this transitory life.

There is another reflection which the change of the seasons may give rise to. As the seasons succeed in nature, so do they in the course of our lives, but with this difference, that those which are past never return. No longer is it that spring of my youth, which beauty, sprightliness, and the graces, attend. The summer and autumn of life, seasons in which I ought to shew fruits of maturity to the world, every day approach. It is very uncertain whether I shall attain the winter of old age. Perhaps I may die in the vigour of life. Thy will be done, O Lord! Provided I persist to the end in faith, virtue, and piety, my life (however short it may be) will always be long and happy enough.

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MARCH XXI.

Several things which appear to be of no Use.

IF there is a wise Providence which governs the world, it seems as if it should extend even to the minutest things, and the most trifling events, in order that nothing should be without its manifest use. But, how many useless things are there in the world? The north wind blasts and disperses the blossoms of the trees; they wither, and are useless. Seeds, which might have produced new plants, perish without yielding fruit. Innumerable multitudes of insects are not only useless, but are even hurtful to man, to beasts, and to vegetables. Many men and animals do no more than shew themselves upon the earth, and suddenly disappear. Others are born deformed and monstrous, or become impotent. How many faculties and talents are lost, for want of an opportunity to make use of them! How many good projects and useful undertakings fail, before they arrive at maturity! Could all this be, if a Being infinitely wise governed this world?—Whoever *dare* question God and his providence, have they, then, a sufficient knowledge of all things, and their connection with each other, to be able to say, with certainty, This answers no purpose; this is absolutely useless. Let us never forget howweak and limited our understandings are. Our duty is to keep a respectful silence; to adore, and not to criticise, the works of the Lord, who has given so many proofs of his wisdom, in an infinite number of things, the use of which are well known to us. Let us also consider that a thing may be useful in different ways; but that, while it serves one purpose, it cannot, at the same time, serve another. The insect, which in

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its infancy becomes the prey of the swallow, cannot certainly produce a new generation. The efforts made by the alchemist to find the philosopher's stone, have not succeeded in the making of gold: but the insect is at least useful in serving as food for the swallow; and the attempts of the chemist have, at least, obtained for us that fine porcelain we enjoy at present. Our tears cannot soften the severe and cruel man, who abuses his power to oppress the weak; but, though our intercessions, in favour of a miserable person, prove useless, yet our tears will not be lost: they serve to keep up the sensibility of our hearts; and there is a Being who will gather those precious tears, to fill the crown which will one day adorn the head of the merciful. Let us, therefore, never think there is any thing in the world entirely useless. There may indeed be certain things which appear not to answer quite the purpose intended: but they serve, nevertheless, the purpose proposed by God; and in the very way he determined on. There may also be cases in which God appears not to have perfectly attained the end he proposed. In order that certain things may take effect, and realize, it may perhaps be necessary that other should in some measure fail, or be defective. But if it be incontestible, that true wisdom does not merely attend to the present, but carries its views to futurity; if God is infinitely wise, and that his wisdom must be shewn to the world as in a glass; there must necessarily happen certain things which, considered separately, appear not to fulfil their design thoroughly, because they cannot do it but in connection with others. The share that these things have in the execution of the whole plan may be so imperceptible, and so little known, that they entirely escape our observation. But it does not follow from thence, that they do not in reality contribute to it. We must,

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on the contrary, conclude, that God would not be infinitely wise, and that he could not act on a well-formed plan, if there did not often happen things which appear to us useless. This persuasion will contribute much to our peace and happiness. Every day, there happens in nature, and in the course of human life, events, the cause and connection of which appear to us incomprehensible, and which we should be sometimes tempted to think useless, and without design. It is natural we should find every thing disagreeable and distressing, which could weaken our confidence in God. And, the more we are convinced by reason, by daily experience, and by the promises of the gospel, of the goodness of God, and the wisdom of his government, the more content and tranquil we shall be, either in prosperity or adversity. It will then no longer be difficult to acknowledge, that, in every thing which God does, or permits, he proposes to himself ends infinitely wise, which are always, in one way or another, beneficial to mankind. If we see many apparently useless things, many events which appear inexplicable, or even entirely contrary to God's plan, far from finding fault, we shall constantly adore his wisdom, and render due glory to him. He has never been mistaken in the government of the universe. All he does, all he permits, is still justified by the event. Let us then refer it to his wisdom, and ever trust to it, without having the temerity to criticise his dispensations. It is the only means of tranquillity here, and happiness hereafter.

MARCH XXII.

Harmony between the Moral and Physical World.

THE wisdom of God has ordained there should be a great affinity between the world and its inhabitants, to shew that the one was manifestly

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made for the other. There is a connection and perfect harmony in all the Creator's works. Human nature, and the surface or the earth, have very near relations to each other, and a striking analogy. As the bodies of plants and animals form, grow, arrive at maturity, and perish; so are men subservient also to this law of nature. As there is a great diversity of climates and soils, some barren, and others fruitful; so is there an equal variety in the minds, talents, and faculties of men. Such has been the plan of the Creator; and there is, in this variety, more goodness and wisdom than we think of at first sight. Far from appearing defective, we should find it all perfection, if we had a thorough knowledge of things. If any body was tempted to object to God's not having given the same faculties, the same degree of understanding, to all mankind; we might answer, Who art thou, blind and weak mortal, that darest to question God on what he has done? Shall the creature say to the Creator, Why hast thou made me thus? We might as well ask, Why God has not ordained that all the kingdoms and countries on earth should be equally agreeable and fruitful? Why, in certain places, the soil is rich and fertile, while in others it is so barren and ungrateful, that all attempts to improve it are thrown away? Let us not doubt that this difference is very right, and worthy our admiration, though it is not always conformable to our way of thinking. The most barren and desert countries have their use and beauty in the eyes of the Creator. It is the same in respect to the most savage and uncultivated nations. All hold their proper place in the immensity of created beings; and their variety serves to declare the wisdom of God, which is infinite. But, as it is evidently the intention of Divine Providence that the earth should be cultivated, and produce abundance of fruits for the preservation of men and animals; as it is for the same purpose that

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God has given us the corn to sow in the ground; so also, and with more reason, does his wisdom require that human nature should be cultivated, and that our souls should be made fruitful, and enabled to reap the excellent harvest of virtue and piety. It is with that design that he has given to mankind lessons of true religion; which, if they find a soil well disposed to receive them, produce excellent fruit, like the corn which is sowed in fertile ground. From thence it is, that the gospel also can have no efficacy in the world, but in proportion to the natural faculties of men, and the dispositions with which they receive it.

There are still, in our days, vast countries, barren and uncultivated, although Providence denies them nothing that they require to make them fruitful. It is thus that, notwithstanding the publication of the gospel, there are still so many people who remain in ignorance. Even among the most polished nations of Christianity, the efficacy of the gospel is unequal, and will ever be so, according to the diversity of characters to whom it is made known. Some do not comprehend it, and have no sense of the salutary virtue of the truths of our holy religion. Others receive those truths with eagerness and joy; but those impressions do not last. With others, the passions and cares of the world stifle the divine word. And, lastly, some (but it is the smallest number) receive it with an honest and upright heart, with wisdom, with conviction, and sincerity. It is for them alone, that it becomes "the power of God unto salvation."

But to which of these do I belong? What impression has the doctrine of salvation made upon my soul? What fruit has the good seed of the gospel produced in my heart? These are questions which my conscience ought to answer honestly and sincerely; but of which my conduct through life will be the best proof.

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MARCH XXIII.

The Nature and Properties of Air.

AIR is that fluid and subtile body which surrounds all our globe, and which every living creature breathes. Although it is so near us, that it surrounds us on all sides, and that we continually experience its effects, we do not, however, know its real nature. What we do know is, that air must be something corporeal; for we may be convinced of it, when we move our hand quick, and drive it towards our face. It is not less certain, that air is fluid; that its parts are separate, pass easily one over another, and by this means yield to every impression. If it was otherwise, if it was a solid body, we could neither breathe nor go through it. Weight is a property common to that, as to all other bodies. Although air is a thousand times lighter than water, its weight is nevertheless very considerable. The force with which air weighs on any surface of a foot square is two thousand pounds. A man, six feet high, whose surface is about fourteen feet square, supports continually a mass of air of 280 stone weight. This, perhaps, may appear incredible. But the resistance of the air which is in our bodies prevents our feeling the weight of the outward air; for the air contained in the human body preserves the balance with that which surrounds us on all sides. The elasticity of the air is no less certain. It continually endeavours to extend itself into a larger space; and though it lets itself be compressed, it never fails to unloose itself as soon as the pressure is removed. Fire and heat shew this property in the air; and, by means of these, it may occupy a space of five or six hundred thousand times greater than what it

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occupied before, without losing any of its elastic force by this prodigious dilatation.

These are so many wonders well worth our admiration; and in them we find the cause of a multitude of astonishing effects. It is air which supports our globe, and keeps it in its orbit. It is in the air that the clouds meet, which assume so many different forms and colours; and which, according as they are condensed or rarified, collect the vapours, or shed them in rain, hail, or snow, upon the earth. Without air we could not make use of our senses, or breathe. Therefore the air also proclaims the rich resources of God's wisdom and knowledge, as well as his goodness and mercy.

MARCH XXIV.

There is nothing new under the Sun.

IT is certain that, in respect to us, there happens many new things upon the earth. Nature causes new flowers to blow every season, and other fruits to ripen. The scene of nature changes every year. Each day brings new events and new revolutions. The situation of objects changes daily, or rather, they present themselves to our senses under different forms. But it is only relatively to our limited understandings and knowledge, that it can really be said, there is any new thing under the sun. Nothing is more certain than the saying of Solomon, that, "What has been will be, and what has been done will be done, and there is nothing new under the sun." God, whose wisdom is infinite, has not thought proper to multiply beings unnecessarily. There are as many as our wants, our pleasures, or our curiosity require. We cannot even gain a superficial knowledge of all the works of our Creator,

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much less are we able to exhaust them. Our senses are not subtle enough to perceive all that God has formed. Our understandings are too weak, to conceive a just and perfect idea of all created beings. We therefore sometimes imagine there are many new things under the sun-for, as the whole creation is immense, and as we cannot take in all the parts of it at once, we fancy that each point of view we see in it for the first time, is new, because the Creator has, in every part of the world, made a wonderful variety and diversity. The world does not require a continued creation to extend to infinity. It is enough that the Being of beings should maintain the order he has established from the beginning. God is an artist who requires but a small number of springs to vary the works he has produced; and which are, however, so varied, and in so great a number, that, though they succeed one another, and return with the greatest regularity, they appear to us ever new. Let us be content to enjoy with gratitude the things he has created, without undertaking to sound the depths of them, or attempting to take in their vast extent. The impossibility of our reckoning all the works of the creation, is, in some sort, the seal by which we may conclude that the world is the work of a God; and it is, at the same time, a certain proof of the weakness of our understandings. But have there not been discoveries made lately, which were formerly entirely unknown? Do not all the kingdoms of nature now present phenomena to us that we had no idea of formerly? The most of these discoveries we owe, less to our sagacity than to our wants. In proportion as these multiplied, new means were necessary to supply them, and Providence deigned to furnish us with those. But the means existed before we discovered them. The minerals, plants, and animals, which we have lately learned to know, existed in the be-

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som of the earth, or on its surface, before the enquiries and labour of man had made them visible to us. It is certain, even, that many of the discoveries we boast the most of, were made by the ancients, or at least partly discovered. If the world was the work of chance, we should now and then see new productions: why then do we not see new kinds of animals, plants, and stones? It is because all has been planned by the infinite wisdom of God. All that he does is so perfect, that it does not require to be renewed or created again; there is sufficient for our convenience and use. Nothing was made by chance. All events have been determined by infinite wisdom, and are linked together in one chain. The whole fabric of the world is preserved by the providence of its Creator, and by the concurrence of laws, both general and particular. All is stamped with wisdom, order, and greatness. In all, and by all, God is praised and magnified. To him be glory, now and for evermore.

MARCH XXV.

Caves in the Mountains.

CAVES are generally found in the mountains, and seldom, or not at all, in the plains. They are formed, as the precipices are, by falling in of rocks; or, like the abyss, by the working of fire. Caves, therefore, may be produced by the same causes which produce the quaking, opening, and falling in of the earth; and these causes are, the explosion of volcanos, the action of subterraneous vapours, and earthquakes: for they make disorder, and throw down buildings; which must necessarily form caves, holes, and openings of every sort. But why are these caves? Of what

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use are they? Suppose even that we could discover no use in them, we ought still to be convinced that they were formed for very wise purposes. As there is nothing on earth useless, can we suppose caves are of no use? But it is not difficult to shew that they are really very useful. The waters collect there in order to be afterwards spread over the earth, and to moisten it when the rain falls. The caves in the mountains keep up the course of the waters in the subterraneous canals. As soon as that circulation is stopped, there come shocks and earthquakes, which spread terror and desolation over our globe. The air contained and confined within the earth, escapes through dens and caves. These openings, therefore, are necessary, that the air may penetrate into the mountains, to give a passage to the winds and a vent to exhalations: for, if the openings in caves do not admit a free circulation, the air contained in them would corrupt, or would lift up and shake the earth. Those caves often fill with waters, from whence rivers and lakes are afterwards formed. Such is the lake Zernith in Carniola, which fills at certain times, and at others dries up, or is lost under the neighbouring mountains, in such a manner that it is sometimes navigable, and at other seasons may be ploughed.—How many animals would perish, if the mountain-caves did not serve them for asylums and retreats during winter? If there were no caves, we should be deprived of several minerals, and many other valuable productions, which cannot be formed or become perfect, but in some subterraneous caverns. We see, then, that even in this respect the wisdom and goodness of our Creator are manifest in a sensible degree. We have a new proof of that great truth, that there is nothing useless in nature, nothing too much, or any thing which is not done with wisdom,

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and for the general good. The more we employ ourselves in these researches, the more we shall adore the sublime perfections of God.

MARCH XXVI.

Circulation of the Sap in Trees.

THE trees, which for several months appeared quite dead, begin insensibly to revive. Some weeks hence we shall discover in them still more signs of life. In a short time, the buds will grow large, will open, and produce their precious blossoms. We have it always in our power to observe this revolution regularly in the beginning of each spring; but, perhaps, have been hitherto ignorant by what means it operates. The effects we observe in spring, in trees, and other vegetables, are produced by the sap, which is put in motion in the stalks of the trees, by the air and increase of heat. As the life of animals depends on the circulation of their blood, so also the life and growth of plants and trees depend on the circulation of sap. For this purpose, God has formed and disposed of all parts of vegetables, so as to concur towards the preparation, preservation, and circulation of this nourishing juice. It is chiefly by means of the bark, that the sap, in spring, rises from the roots into the bodies of trees, and even conveys, throughout the year, all the nourishment to the branches and fruit. The wood of the tree is composed of small long fibres, which extend in a direct line the whole length of the tree to the top; and which are very closely joined together. Among those fibres, there are some so small and fine, that one of them, though scarce as thick as a hair, contains more than eight thousand little

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fibres. There are a multitude of little veins to contain the nourishing juice, and to make the circulation easy. These veins extend to the other branches, and rise up the whole length of the tree to the top; some conduct the sap from the root to the top of the tree; and others bring it down from the top to the bottom. The sap rises up the ascending veins in the heat of the day, and comes down the others again in the cool of the evening. The leaves serve for the same purpose, and their chief use is to make the sap circulate; not only that which proceeds from the root, but also what the tree receives outwardly by means of dew, the moisture of the air, and rain. This nourishing juice is spread through every part of the tree. But it could not rise through the stalks, if there were not openings in them at the top. It is through these pores that the watery parts of the sap evaporate; while the oily, sulphureous, and earthy parts mix together to nourish the tree, to transform into a substance, and give it a new growth. If the juice does not reach it, if the circulation is stopped, if the interior organization of the tree is destroyed, whether by too severe cold or frost, by age, or by any wound or outward accident, the tree dies.

After these reflections, can we see, with the same indifference as formerly, the trees at this season? Will the change there is going to be in them appear so little worth our notice? And can we observe the renewal of all nature, without thinking of God, who gives life to every creature; who provides the juices analogous to trees; who communicates to that sap the power of circulating through the veins, and from thence of giving to trees life, nourishment, and growth? Alas! that it should be possible to see all these things every year, without giving proper attention to them: It is what I am too strong a proof of. At the return of many springs, I have had

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the opportunity to observe this quickening virtue which appears in plants and trees; but I have thought no more about it than the animals which graze in the fields; and, what is still more wonderful, I have been equally inattentive to the preservation of my own life, the growth of my body, and the circulation of my blood. Grant that I may now, at least, as I have the happiness to see the spring again, think in a more reasonable way, and more as a Christian. May I at last acknowledge, through all the works of nature, that beneficent Creator, whose greatness all the world proclaims. But all my wishes will be fruitless, if Thou thyself, O Lord, who art the God of all mercy, dost not incline my heart to acknowledge and glorify thy great and holy name. Now, that all nature revives, grant that my soul may be quickened by thy Spirit. May this new existence, which the vegetables receive at this lovely season, be the signal to awaken me from my slumber, and lead me to virtue.

MARCH XXVII.

Our Ignorance of our Future State.

IF we are ignorant of future events, we must not seek the cause of it merely in the nature of our souls, the faculties and knowledge of which are very limited; but also in the express and infinitely wise will of the Creator. He knew the strength of man; and he would not give him more knowledge than he could bear.

Knowledge is to the soul what the light of the sun is to the eyes: a too great splendour would hurt, without being of use. It would be very dangerous to the virtue of man, if he had the faculty of foreseeing what was to happen to him; for outward circumstances have generally some in-

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fluence on the way of thinking, and in the resolutions we form: Therefore, the more we knew of future events, or the more temptations we should have to surmount, the more we should have to fear for our virtue. How wretched also should we be, if we could see into futurity! Suppose, in reality, that the future events were to be agreeable and happy: While we do not foresee this greater happiness which awaits us, we enjoy with gratitude the present advantages we possess. But, draw the curtain, and discover an agreeable prospect of futurity, and we cease from that moment to enjoy the present. We should no longer be content, happy, or grateful. We should anxiously and impatiently expect the fortune designed us; and our days would pass one after another without enjoying them. But suppose future events are to be sad and melancholy, we suffer before-hand all the afflictions as soon as we foresee them. Days which might have passed agreeably in peace and quiet if the future had been concealed from us, are, as soon as we know it, spent in anxiety, in sorrow, and in sad expectation of a certain evil. In a word, the idea of the misfortunes reserved for us would prevent our enjoying present happiness, and would make us insensible to it. How great, therefore, is the wisdom and goodness of God, in having thrown a veil over futurity, and only letting us know our fate by degrees, as the destined events happen to us! Let us never wish to anticipate the happiness which awaits us, nor to feel the weight of evils before they happen. Let us, on the contrary, every time we think on futurity, bless God, for having, by this ignorance, spared us so many cares, fears, and sorrows. Why should we wish to see through the veil which covers futurity? If we are certain of our reconciliation with our God and Redeemer, we may also be certain, that all future events, be they agreeable or otherwise,

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will infallibly contribute to our real welfare.—And is it not a merciful and gracious God who directs all events, and who rules futurity? He sees at once the whole course of our lives, not only the past, but even what is to come, as far as eternity itself. When we lie down to sleep, let us recommend ourselves to the care of our heavenly Father, without troubling ourselves about what may happen in the night; and, when we awake, let us trust in him, without being anxious for the events which may mark the day. In the midst even of the dangers with which we are surrounded, and the misfortunes which threaten us, let us remember the goodness of God; let us put our trust in him, and never doubt that he will either remove them, or turn them to our advantage.—But though we do not know what evils await us, we need have no anxiety on that account; because we know that God is not ignorant of them: and that, when they happen, he will not fail to support and assist us. It is therefore to this wise and merciful Disposer of all events that we should, with entire confidence, trust our fates. Whatever God has decreed for us, must necessarily happen. It is the portion allotted to us, and proper for us. The cup that is presented, let us receive it willingly, and without murmuring, convinced that it is for our good. Let us resign ourselves to the Lord, and depend on him entirely for whatever he may please to decree as to our lives or deaths. Whether we live or die, our portion and our inheritance will be the joys of paradise. Be calm then, my soul. Our glory is to submit to the will of our Creator. He is our heavenly Father, and will guide us through all dangers to the happiness allotted for us.

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MARCH XXVIII.

The insensible approaches of Night.

AS the night is, in itself, one of the Creator's favours, so it is a wise and beneficent dispensation that it only comes on by degrees. A sudden transition from the light of day to the darkness of night would be both inconvenient and frightful. So sudden a change would occasion a general interruption to the labours of man, which, in certain affairs necessary to be finished, and which do not admit of delay, would be very prejudicial. All nature, men and animals, would be seized with fright; and in this sudden transition from light to darkness, it would be impossible that the organs of sight should not suffer very much.—Darkness, therefore, does not come upon us of a sudden; it advances slowly; and the twilight, preceding night, leaves us time to finish our most pressing business, and to make the necessary arrangements. By this means, the coming of the night does not disturb or incommode us; and we are warned in time to prepare for it. But, from whence proceed these remains of light, which, at the end of each day, in some degree, temper and soften the melancholy appearance of night? We no longer see the sun; and yet a part of its mild lustre still reflects itself. Let us, in this, admire the wise and beneficent plans of nature. The atmosphere which surrounds us has been so formed as to do us this essential service. The rays of the sun, which fall on the upper parts of the air, do not run in a direct line, but they bend; and this bend leads them where their first direction would not have carried them. The atmosphere, having thus bent, and turned back a great number of rays, which otherwise would not have reached us,

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reflects them afterwards to our sight, and, by this means, we enjoy light much longer, and the time for labour is considerably prolonged.

It is thus that a gracious Providence has planned, not only the great revolutions of seasons, but also the daily transition from light to darkness, in the manner most advantageous to us. Let us, therefore, acknowledge, with thanksgiving, the goodness of our Creator, and adore his wisdom in this arrangement so useful to us. The insensible approach of night, in the inanimate part of the creation, makes me think of the approach of the evening of my life. That also comes on by degrees; and I shall be almost imperceptibly surrounded by the shades of death. God grant that the great work I have to do may then be happily ended, and that I may have fulfilled the task allotted me. I must work while it is yet day. The night comes, in which no man can work.

MARCH XXIX.

Magnificence of God in his Works.

WHY is there such splendour in the works of God? Why is there such magnificence in all we see? Why do we discover, on all sides, so many different numberless objects, which appear each more beautiful than the other, and each of which has its peculiar charms? Why do we everywhere find new cause for wonder and admiration? It is, doubtless, that we may never cease to admire and adore the great Being, who is infinitely more beautiful, more sublime, and more magnificent, than all we admire most in nature. It is, that we may continually say to ourselves, If the works be so complete, what must the Creator be? If such is the beauty of creatures, what must be the inexpressible beauty, the infinite

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greatness, of Him who beholds, with one glance, the whole creation? If the sun has a dazzling brightness, which our eyes cannot bear, ought we to be surprised, that he who lighted that globe, dwells in inaccessible light, where no eye has seen, or can see him? Should he be less wonderful than the beings he has formed? The more wonderful his works are, the more he himself must raise our wonder and admiration. If we could thoroughly comprehend his greatness, he would not be a God, or we should not be men. How then can we better enlarge our minds, and lay up a richer treasure of ideas, than in contemplating that God, whose greatness and magnificence is unlimited? Is it not in such contemplations that the faculties of our souls may best acquire that force and energy, which will make us capable of enjoying infinite happiness? The more extensive our knowledge here, and the more our minds are enlarged in the contemplation of the greatest of all beings, so much the more we shall be able to adore him in a future state. Let us, therefore, always divide our attention between God and nature; but only in order to consider in the latter, as in a glass, the image of that Being whom we cannot contemplate face to face. Let us collect the many beauties and perfections which are scattered over the vast empire of the creation; and, when their innumerable multitude strikes us with astonishment, we shall say to ourselves, that, compared to the perfections of their Creator, they are less than a drop in the ocean. Let us only consider what is amiable and beautiful in created beings, abstracting what is finite and limited, in order to form a more just and proper idea of the excellence of the Ruler of the universe: and, when the faults and imperfections of his creatures may have lessened our admiration of their beauty, let us cry out, If the creation is so beautiful, notwithstanding its defects, how great and worthy of

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admiration must He not be, whose splendour is spotless, more pure than light, more brilliant than the sun!

Then, O my soul, collect all thy powers to give thyself up entirely to the contemplation of the most adorable God. Take no rest till thou hast soared even to the boundless perfections of Him, who is raised infinitely above every other, the most perfect of beings. Let thy chief study be to acquaint thyself with God; because there is nothing greater than God; because it is the only knowledge that can satisfy thee, and fill thy heart with a peace and joy which nothing can disturb: and it is even a foretaste of that more perfect knowledge with which thou wilt be blessed at the foot of his throne, and which will constitute thy happiness to all eternity.

MARCH XXX.

The Arrangement of the Seasons in other Planets.

THE diurnal rotation of the earth round its own axis, and its annual course round the sun, are great advantages to us. Does it not, therefore, authorise us to presume that the other planets have equal advantages? Most of them turn on their own axis; and it is very probable that it is the same with respect to Mercury and Saturn, though we cannot observe their motion. All the planets move in their orbits round the sun; and even the secondary planets take the same course round their chief planets. Now, as the motion of our earth produces the constant vicissitudes of day and night, and the change of seasons, it is very apparent, that the same thing happens in the other planets. Venus turns round on her own axis in the space of 33 hours and an half. Mars finishes his revolution in 24 hours and a quarter; Jupiter in 10

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hours; and the moon in 28 days. If then we divide the day, that is to say, the time during which this revolution is made; if we divide it (I say as we do with respect to our earth, in 24 equal parts, each of which is called an hour; the hours of Venus will be a little shorter, and those of Mars a little longer than ours. As for those of Jupiter, they will not be half so long as those of the earth. If the moon is 28 days in moving round its axis, a whole day and more must be in that planet what an hour is in our globe. It is also to be remarked, that the position of the axis of the planets is inclined, like that of our earth; from whence it naturally follows, that, during their course round the sun, their northern side is sometimes more, sometimes less enlightened. Is it not therefore probable, that, in all the planets, the revolutions of seasons, and the alternate length and shortness of days, take place as on our earth? But, it may be asked, to what purpose all these reflections! They would be useful if they only served to increase our knowledge! But they will appear still more important to us, if we think of the consequences resulting from them. May we not conclude from these, that the other planets also are inhabited by living creatures? All the planets are like the earth. They are alike warmed and illuminated by the sun. Thy have their night and day, their winter and summer. To what purpose would all this be, if those worlds were not inhabited? What an idea does not all this give us of the greatness of our Creator! How immense his dominion! How impossible to know all the wonders of his power and goodness! When we reflect on all these worlds, where his glory shews itself as much, and perhaps more, than on our globe, we must be struck with astonishment, and adore him with sentiments of the most profound veneration.

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MARCH XXXI.

Paternal Cares of Providence for the Preservation of our Lives in every part of the World.

WE know at present a great part of our globe: and new regions of it are still discovered from time to time. But no place has yet been found, where nature did not produce some of the necessaries of life. We know countries where the sun burns up almost every thing; where little is to be seen but mountains and sandy deserts; where the earth is almost entirely stripped of the verdure with which it is so richly adorned in our climates. There are countries which are scarce ever cheered with the rays of the sun, and where its beneficent warmth is rarely felt; where an almost continual winter benumbs every thing; where there is neither culture, fruit, nor harvest. And yet there are men and animals there, who do not fail of subsistence. The productions denied them by Providence, because they would have been burnt by the sun, or frozen by the severe cold, are supplied by gifts more suitable to those climates, and on which men and animals can feed. The inhabitants seek with care what nature has in store for them. They know how to appropriate it to their own use: and they thus procure for themselves all they require for their subsistence and convenience of life. In Lapland, Providence has so contrived, that an evil, in some respects very inconvenient to the inhabitants, becomes a means of their preservation. They have an innumerable multitude of gnats, who, by their stings, are a plague to the Laplanders, and from which they cannot guard themselves, but by keeping up in their cottages a continual thick smoke, and daubing their faces with pitch and tar. These insects lay their eggs

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on the water, and, by that means, draw a great number of aquatic birds, who feed on them, and being afterwards taken by the Laponese, become themselves the chief food of those people. The Greenlanders generally prefer animal food to the vegetable; and it is true there are very few vegetables in that barren country. There are however some plants in it, which the inhabitants make great use of; for example, sorrel, angelica, and particularly the spoon herb, cochlearia. But their chief food is the fish which they call angmarset. After they have dried it in the open air upon the rocks, it serves them every day instead of bread or greens; and they preserve it for winter in great leather sacks. In Iceland, where there is no agriculture, owing to the severe cold, the people live on dried fish instead of bread. The Dalecarlians, who inhabit the north of Sweden, having no wheat, make bread of the bark of birch and pine, and a certain root which grows in marshes. The inhabitants of Kamtschatka feed on the stalk or trunk of the bear's-foot plant, which they eat raw, after they have peeled it. In Siberia, they make much use of the roots of mountain-lily.

Adorable Father of all mankind! such are the tender mercies of thy providence for our preservation. With what goodness hast thou spread over the whole earth that which is requisite for our subsistence! Thy wisdom saw, before the foundation of the world, the dangers to which the lives of mortals would be exposed, and ordained that we should every where find sufficient food. Such a relation, connection, and communication, was formed by the decree, between the inhabitants of the earth, that people separated from one another by vast seas, labour notwithstanding, for their mutual ease and subsistence,

Can we enough admire and revere the Divine Wisdom, which has given us bodies so formed as

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not to be confined to such or such particular food, but to be able to make use of every kind of nourishment! Thus, by a goodness which cannot be too highly praised, man does not live by bread alone, but by the word of God also; that is to say, on all that God ordains, on all things to which he has given the virtue of food and sustenance.

APRIL 1.

Abuse of Animals.

SO improper an use is made of animals, and in so many ways, that it would be difficult to enumerate them. These abuses, however, may be confined to two chief points; that of too much or too little value being set on them; and, in either case, we act contrary to the intention of the Creator. On one hand, we lower the brutes too much, when, under the pretence of being permitted the use of them by God, we assume an unlimited power over them, and think we have a right to treat them according to our caprice. But how can we prove that we have that right? And suppose even that we had, would it be just that our power should degenerate into cruelty and tyranny? All who are not corrupted by passions, or bad habits, are naturally inclined to compassion towards every being that has life and feeling. This disposition undoubtedly does honour to man, and is so deeply engraved on our minds, that any one who had rooted it out, would prove to what a degree he was degraded and fallen from the dignity of his nature. He would have but one step more to make (to refuse to man the compassion he does not grant to beasts), and he would then be a monster. Experience but too well justifies this remark, and many examples of it may be recollected. History furnishes us with them.

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We see by it, that nations, where the people took pleasure in bull-baiting, distinguished themselves in cruelty towards their fellow-creatures. So true it is, that our treatment of beasts has an influence on our moral characters, and on the gentleness of our manners. It may be said, that we have a right to destroy hurtful animals. I confess it. But does it follow from thence, that we are authorised to take from them, without pity or regret, a life which is so dear to every creature; and that, when necessity forces us to it, we should find a barbarous pleasure in it, or think we have a right, in thus depriving them of life, to make them suffer torments, often more cruel than death itself? I grant that the Creator has given us the animals for our use and pleasure, and that they are designed, by their labour, to spare ours. But does it follow, that we must unnecessarily fatigue them, exhaust them with labour beyond their strength, refuse them sustenance merited by their services; in fine, aggravate their sufferings by severe treatment? But no more need to be said, in regard to this kind of abuse. Men fall sometimes into the other extreme, by setting too high a value on animals. Those of a social character, which are more connected with us, which live in our houses, which amuse, or are useful to us, inspire us often with an extravagant and ridiculous affection. I am almost ashamed to say, there are men and women extravagant enough to love those creatures to such a degree, as to sacrifice to them, without scruple, the essential duties they owe to their fellow-creatures. Let war be kindled between nations, let armies destroy one another; the news will not make the least impression on a lady, who some days before was inconsolable for the loss of her spaniel. How much might be said on this! but I wave it, in order to conclude these reflections by a very important remark. Parents, and all who have the charge of children's educa-

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tion, or who live with them, cannot be too attentive to avoid scrupulously themselves any abuse of animals. It is the more necessary to dwell on this maxim, because, in general, it is much neglected; and very bad examples of this kind are given to children, which has sometimes influence upon their whole education. No beast ought to be killed in their sight: much less should they be employed to do it. Let them be taught to treat animals, as beings which have life and feeling, and towards whom we have duties to fulfil. But, on the other hand, take great care that children do not attach themselves too much to animals, or grow passionately fond of them, as they are apt to do. In guarding carefully against children's making a bad use of animals, either way, they should also be taught to make a good use of them, that they may, from their earliest age, be accustomed to acknowledge, even in those creatures, an impression of the perfections of the Creator.

APRIL II.

The Motion of the Earth.

WHEN the delightful prospect of the rising sun renews each morning in our souls the gratitude and admiration due to the sublime Author of the universe, we may at the same time observe, that the place in which this magnificent sight is beheld, changes with the seasons. To be convinced of this with our own eyes, we need only examine the place where the sun rises in spring and autumn: we shall perceive it afterwards in summer more to the north, and in winter more to the south. We shall reasonably conclude from thence, that some motion must be the cause of these changes; for we cannot see a body of any sort change its place, without being

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occasioned either by its own motion, or that of another body. We are naturally led to think that it is the sun which moves, as we see it sometimes on one side, and sometimes on another. But, as the same phenomena would take place, supposing the sun to remain immoveable, and that we with the earth were turning round it, we ought to depend less on our own conjectures, than on the repeated observations made by astronomers upon this subject, which prove the motion of the earth. Let us, in the first place, represent to ourselves the immense space in which the celestial bodies are placed. It is either empty, or filled with a substance, infinitely subtile, called *æther*. In that space it is that our globe floats, as well as all the other planets which compose our solar system. The sun, the dimensions of which have been mentioned already, is placed in the centre, surrounded by its worlds, which it surpasses greatly in size. The weight which our globe has in common with all other bodies, draws it towards that centre, or else the sun draws the earth, by the power which the greater bodies have of attracting the lesser. Thus, each time the earth inclines to move from the sun, it is drawn back again. It moves in a circle round itself, in the same manner as we have seen a sling turn round; or, to make use of an example still more analogous, like a cannon ball, which describes a curved or crooked line. It is true, it falls again on the ground, after having gone over a certain distance; but perhaps it would continue the same line for the space of some miles, if it had been sent off from the top of a high mountain. Suppose a still greater height, it would go farther in proportion. Add still to that height, and it would go as far as our Antipodes, to return at last to the point from whence it set out. All these effects would take place from the laws of gravitation, or the attractive power of our globe; and it

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is in the same manner that this earth describes its orbit round the sun. This orbit is not a perfect circle, but an ellipsis, which occasions our being farther from the sun at one time than at another. In making the course round the sun, it takes 365 days, 5 hours, 48 minutes, and 43 seconds, the space of time which is the measure of our year; after which revolution we find the sun again in the same place. For, in each point of the orbit of the earth, the sun appears to us at the opposite side of the sky, so that at every insensible motion of the earth, we fancy it is the sun that moves. In spring the sun is seen equally distant from the poles: this causes equal nights and days. In summer it is 23 degrees 30 minutes nearer the north, which occasions our longest days. In autumn it returns to an equal distance between the poles: and, in winter, it removes as far towards the south as it had approached the north; and it is then that our days are the shortest.

If such is the order and plan of the great work of the creation, how much reason have we to admire and adore the supreme wisdom and goodness of the Creator! How precious to us ought every new acquired knowledge to be, that discovers to us the Father of all nature by his works. We find him every where. We are every where obliged to cry out, Lord, Thou hast done all things with wonderful wisdom!

APRIL III.

The immense Riches of Nature.

TO be convinced of the extreme liberality with which nature dispenses her gifts, it would be sufficient to reflect on the prodigious number of human creatures, who receive their food, their raiment, and every pleasure they enjoy, from that

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beneficent mother. But, as this is perhaps one of those things which, because they happen every day, no longer make the impression they ought to make upon our hearts, we will turn our reflections on creatures which are partly made for our use; and some of which are become objects of our contempt. This meditation will teach us, that all the beings spread over our globe proclaim the goodness of their Author, and incite us to glorify his name, if our hearts are susceptible of any feeling. An innumerable quantity of living creatures, inhabitants of the earth, the air, and the waters, are daily indebted for their subsistence to nature. Even the animals which we take care to feed, properly speaking, owe their food to her. The grass, which grows without being sown, is their chief food. The whole race of fish subsist without man's assistance, unless those which he feeds for his amusement. The forests likewise produce acorns, the fields and mountains produce grass without culture. Amongst the birds, the species the most despised, and perhaps the most numerous, is the sparrow. Their number is so prodigious, that the king of France, with the produce of all the fields in his dominions, would be too poor to feed them for the space of one year. It is nature, who takes from her immense magazine what is necessary to support them: and yet they are but the smallest part of her children. The quantity of insects is so great, that perhaps many ages may pass away before their several species and classes can be known. What numbers of flies are there, and how many different sorts of them do we see playing in the air? The blood the gnats take from us, is a very accidental food for them, and it may be supposed that, for one gnat that lives on it, there are millions who have never tasted human blood, or that of any animal whatever. On what do all those creatures live? There is not a handful of earth which does not contain

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living insects. In every drop of water, creatures are discovered, whose means of support, as well as their multiplying, are incomprehensible. Immensely rich as nature is in living animals, so is she equally fruitful in means for their subsistence; or rather, it is the Creator who has poured into her bosom this inexhaustible source of riches. Through him each creature finds its food and dwelling. It is for them he causes the grass to grow, leaving each to choose its proper food. And none of them are in his sight too insignificant to disdain his casting upon them an eye of pity, and to assist them in their wants. In this is thy greatness manifest, O Almighty God! What no man, nor monarch, nor even all the men and monarchs on earth could do, Thou dost it, O Creator! Thou feedest every animal! Thou feedest the raven that calls upon Thee, and every insect that lives in the air, in the earth, or in the water! And will he not do for us what he does for them? If ever doubts or fears possess our souls, let us reflect upon the creatures of whom he takes daily care. Let the birds of the air, the wild beasts of the desert, and those millions of creatures which man takes no care of, teach us the art of living contentedly. He who clothes the flowers of the field, who gives food to all animals, the great Author of nature, knows all our wants. Let us, therefore, have recourse to him in our afflictions. Only let our prayers be with faith and sincerity.

APRIL IV.

Sun-rise.

HAVE you sometimes been a witness of the superb phenomenon which the rising sun every day affords? Or has idleness, the love of sleep, or

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a faulty indifference, prevented you from contemplating this wonder of nature? Perhaps you may be ranked amongst the multitude of people who never thought a sight of the Aurora worth the sacrifice of some hours sleep. Perhaps you are like many others, who, satisfied with the light of the sun, do not trouble themselves with inquiring into the cause of this great effect. Or, lastly, perhaps you are as insensible as millions of your fellow-creatures, who have it in their power to behold this glorious object every day, see it without being struck with it, or without its raising any idea or pleasing reflection in their minds. It matters little in which of these you rank. Suffer yourself only to be now at least roused from this state of insensibility, and learn what thoughts the sight of the morning sun ought to excite in your soul. There is no phenomenon in nature more beautiful and splendid than the rising sun. The richest dress that human art can invent, the finest decorations, the most pompous equipage, the most superb ornaments in the palaces of kings, vanish and sink to nothing, when compared with this beauty of nature. At first, it is the eastern region of the sky which is clothed in the purple of Aurora, and announces the sun's approach. The air, by degrees, takes the bloom of a rose, and then shines with the lustre of gold. Afterwards the rays of the sun pierce through the mist, and with them light and heat are spread over the whole horizon. At last, the sun appears in all the splendour of majesty. It rises visibly higher and higher, and the earth assumes a different aspect; every creature rejoices, and seems to receive new being. The birds, with songs of joy, salute the source of light. Every animal begins to move; and they feel themselves animated with new strength and spirits.

Praise the Lord, O my soul! Let my songs of praise also reach the heavens, the heaven where

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he dwells, by whose command the sun rises, and whose hand so guides its daily and its annual course, that we draw from it the happy revolution of night and day, and the regular succession of the seasons. Raise thyself, my soul, towards the Father of lights, and set forth his majesty. Celebrate him, by a pious confession of thy dependance on him, and by actions that are pleasing in his sight. Behold! all nature proclaims order and harmony. The sun and all the stars run their course. Each season yields its fruit. Each day renews the splendour of the sun. Who would, in the midst of the active creation, be the only one to neglect praising his Creator, by proving his virtue and faith? Rather let our pious zeal teach the infidel, how great, how worthy of adoration, that God is whom he despises. Let the tranquillity of our souls, and trust in him, teach the vicious how mild and merciful that God is, before whom he justly trembles. Let us be toward our fellow-creatures what he is to us. Let us be to them what the sun is to the whole universe. As it sheds daily its benign influence on the earth; as it rises for the ungrateful as well as the righteous; as it shines on the humble valleys, as it does on the highest mountains; so let us make our lives useful, beneficent, and a comfort to others. Let each day increase the charitable disposition of our hearts. Let us do good to all, according to our abilities, and without respect to persons. In a word, let us endeavour to live and act, so that our lives may be a blessing to mankind.

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APRIL V.

Wonderful Construction of the Ear.

THE ear, it is true, in respect to beauty, must give place to the eye. However, it is perfectly well-formed, and is no less a master-piece of the creative hand. In the first place, the position of the ear shews much wisdom. It is placed in the most convenient part of the body, near the brain, the common seat of all the senses. The outward form of the ear is worthy our admiration. It greatly resembles a muscle; but has neither the softness of mere flesh, nor the hardness of bone. If it was only flesh, its upper part would fall down over the orifice, and would prevent the communication of sounds. If, on the contrary, it had been composed of hard bones, it would be very painful and inconvenient to lie on either side. For this reason the Creator formed the outward part of the ear of a gristly substance, which has the consistence, the polish, and the folds, most proper to reflect sounds; for the use of all the external parts is to collect and convey them to the bottom of the ear. The interior construction of this organ must still more excite our admiration. There is in the shell of the ear an opening, which they call the *auditory pipe*. The entrance of it is furnished with little hairs, which serve as a bar, to keep insects from penetrating into it; and it is for the same purpose that the ear is moistened with a substance that is conglutinous and bitter, which separates itself from the glands. The drum of the ear is placed obliquely in the auditory pipe: this part of the ear really resembles a drum; for, in the first place, there is in the cavity of the auditory pipe a bony ring, on which is stretched a round mem-

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brane, dry and thin: in the second place, there is, under that skin, a string stretched tight, which does here the same service as that of the drum; for it increases, by its vibrations, the vibration of the drum of the ear, and serves sometimes to extend, and sometimes to relax the membrane. In the hollow, under the skin of the drum, there are some very small bones, but very remarkable, called auditory bones, and distinguished by these names: the hammer, the anvil, the orbicular, and the stirrup. Their use is, to contribute to the vibration, and to the tension of the skin of the drum. Behind the cavity of the drum, another opening must be observed, which communicates with a pipe which leads to the palate, and which is equally necessary to produce the sensation of exterior sounds. Next comes the snail, which rises in a spiral line. Behind is the auditory pipe, which joins the brain.

Hearing is in itself a thing worthy of admiration. By a portion of air, extremely small, which we put in motion, without knowing how, we can in an instant make our thoughts known to one another, with all our conceptions and desires, and this in as perfect a manner as if our souls could see into each other's. But, to comprehend the action of the air, in the propagation of sounds, more clearly, we must remember that the air is not a solid body, but a fluid. Throw a stone into a calm running water, there will result from it undulations, which will extend more or less, according to the degree of force with which the stone is thrown. Let us now suppose, that a word produces in the air the same effect as the stone produces in the water. While the person who speaks is uttering the word, he expels (with more or less force) the air out of his mouth; that air communicates to the outward air which it meets, an undulating motion, and this agitated air comes and shakes the stretched membrane of the drum

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in the ear; this membrane, thus shaken, communicates vibrations to the air which resides in the cavity of the drum; and that strikes the hammer; the hammer, in its turn, strikes the other little bones; the stirrup transmits to the nerves, through the oval orifice, the motion it has received; and they then vibrate like the strings of a fiddle. This motion gains strength in the labyrinth, and reaches to what is properly called the auditory nerves. The soul then experiences a sensation proportionable to the force or weakness of the impression received; and, by virtue of a mysterious law of the Creator, it forms to itself representations of objects and of truths.

God, in order to make us more sensible of his general goodness towards mankind, permits, now and then, that some should be born deaf. Must it not teach us to value highly the sense of which they are deprived? The best way to prove our gratitude for so great a blessing, is to make a good use of it.

APRIL VI.

The Milky Way.

WHEN we examine the sky at night, we perceive in it a pale and irregular light over our heads; a certain quantity of stars, whose mixed rays form this light. This apparent cloud, or luminous tract, is commonly called the milky way. These stars are too far from us to be perceived separately by the naked eye; and between those which are visible through a glass, there are spaces discoverable, which, to all appearance, are filled by an immense quantity of other stars, which even the telescope cannot make visible. It is true, that the number already discovered is prodigious; but if we could make our observations

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on another side of the globe, from a part nearer the antarctic pole, we should then make still more discoveries: we should see a great number of stars which have never appeared on our hemisphere. And even we should not know half, perhaps not a millionth part of the radiant bodies which the immense expanse of the heavens contains. The stars which we see in the milky way, appear to us no more than shining specks, yet they are much larger than the globe of the earth. Whatever instrument we make use of, they still appear as before. If an inhabitant of our globe could travel in the air, and could attain the height of 160 millions of leagues, those bodies of fire would still appear only like shining specks.—— However incredible this may seem, it is not a chimerical idea, but a fact which has actually been proved; for, towards the tenth of December, we were more than 160 millions of leagues nearer the northern part of the sky, than we shall be the tenth of June; and, notwithstanding that difference, we did not perceive any difference of size in those stars. The milky way, so inconsiderable in comparison of the whole space of the heavens, is sufficient to prove the greatness of the Supreme Being; and every star discovered in it teaches us the wisdom and goodness of God. What are those stars in comparison of the immense quantity of globes and worlds which roll in the firmament! A late ingenious astronomer, by the help of a telescope of remarkable power, has confirmed, beyond conjecture, this account of the milky way, and says, "That even our sun, and, in consequence, our whole solar system, forms but a part of the radiant circle. Many small specks in the heavens, unseen by mortal eye, he discovers to consist of myriads of stars; being, as he supposes, entire systems of themselves." Here reason stops and is confounded: to admire and adore is all that remains for us to do.

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Every time that the starry sky shall strike my eyes, grant that I may raise my thoughts to Thee, O Lord. Adorable Creator! I confess, with shame and regret, how little I have thought of Thee at the sight of the heavens; how little I have admired thy greatness, or praised thy power. Pardon this insensibility, this ingratitude. Raise this soul, encumbered with earthly ties; raise it to Thee, O Creator of heaven and earth. Grant that a lively sense of my unworthiness may incline me to humility: then vouchsafe to raise me up again, by this sublime thought, that one day my redeemed spirit will soar above the region of the stars.

APRIL VII.

Reflections on the Seeds of Plants.

THE vegetable kingdom, to an attentive observer of the works of God, is a school where he learns the profound wisdom and unlimited power of that Supreme Being. Though we were to live an hundred years upon earth, and could devote every day to the particular study of one plant, there would still remain, at the end of that time, many things we either did not observe, or were not capable of perceiving. Let us reflect on the production of plants: let us examine their interior construction, and the formation of their several parts: let us consider the simplicity and variety of them, from the blade of grass to the highest oak: let us try to learn the manner in which they grow, in which they propagate, in which they are preserved, and the different uses they are of to men and animals. Each of these articles will sufficiently employ the mind, and make us sensible of the infinite power, wisdom, and goodness, of the Creator. We shall every where discover, with admiration, the most asto-

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nishing, incomprehensible order, and the most excellent design. Though we were to know no more of plants than those phenomena visible to every eye; though we were only to know that a grain of corn sown in the ground, shoots first a root down into the earth, and then shoots upwards a stem, which bears blossoms, branches, leaves, and fruit, and wherein are contained the seeds of new plants; this alone would be sufficient to prove the wisdom of the Creator. Let us consider for once with attention, all the changes which a grain of wheat goes through: we sow it in the ground at a certain time; this is all we can do. But what are the operations of nature, after we have thus left it to itself? As soon as the earth supplies it with sufficient moisture, it swells and bursts open the outer coat, which had till then concealed it in the root, the stalk, and the leaves. The root pierces through, and sinks deep into the earth, and prepares nourishment for the stem, which makes efforts to rise even with the earth. When it has arrived at this, it grows by degrees till it has attained its proper height. It opens its leaves, which at first are white, then yellow, and at last tinged with green.—If we confine our observations to this grain of wheat alone, which is so necessary to our subsistence, what wondrous wisdom do we not discover in it! As soon as the outer skin is burst, and the root has shot into the earth, the stem ventures to spring up in the form of a very slender stalk; yet, weak as it appears, it is already strong enough to bear the intemperance of the seasons. By degrees it grows up, and becomes an ear of corn, the sight of which is so pleasing to mankind.—The wheat is inclosed with leaves, which serve as a coat for it till it is strong enough to break through them, and is armed with points to defend it from the birds.

The fields of corn ought naturally to make us

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remember those fields where God lays up another seed. The human bodies deposited in the earth are as seed sown, whose destination is to grow and ripen for the harvest of eternity. We had as little reason, on looking at the grain of wheat, to expect it to produce an ear of corn (though the essential parts of it were in grain), as we have to believe that our bodies, reduced to dust, will one day become glorified bodies.

The time will come, when the seed will burst forth, my dust will be raised again, and I shall live through Jesus Christ. My body must decay and turn to dust, but I shall not be eternally in the grave. My soul shall rest, after the labours of this life, in the bosom of my God. The eye hath not seen, neither hath the ear heard, any thing on earth equal to such salvation.

APRIL VIII.

The Blue Colour of the Sky.

TO judge simply by our senses, we might imagine the sky over our heads a great vault painted blue, and the stars so many little brilliant nails stuck in it. It is true, that such an idea could hardly be formed, but by the common people and children; yet there are many people who think themselves superior to those, who form very absurd notions of the sky, and its blue appearance by day. The reason of it is, that our atmosphere is not quite transparent. If we were raised very high above the surface of the earth, we should find that the air becomes more and more subtile the higher we go, till we could no longer breathe in it; and at last it would end in pure æther. The higher we climb on mountains, the more light the atmosphere grows, and the more pale the bright azure of the sky appears. If we could

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rise as high as pure æther, this colour would be entirely lost. The sky would seem to us as black as at night; for all objects that do not transmit to us any rays of light appear so. Consequently, if the air that surrounds us was as transparent as æther, the sky would not appear blue to us. Our air is full of little particles, which, when lighted by the sun, receive a motion, which produces new rays; and these particles, though dark in themselves, become visible to us when lighted up. Their colour is blue. This is the reason that a forest, when we are near to it, looks green, but, as we move farther from it, looks more and more of a bluish colour. However pale and slight the blue rays of air may be, there falls so great a quantity of them on our eyes, when we are in the open air, that the effect resulting from them is rather a dark blue. These reflections may make some consider the sky differently from what they had done before. It may from hence be concluded, that to the very colour of the sky, there is no phenomenon in nature, in which we may not discover order, utility, and a wise purpose. As the colour of green is the best that the Creator could have chosen for the ornament of the earth, so is the fine azure blue of the sky the most calculated to charm the eye. How dreadful is the appearance of the sky, when covered with stormy clouds! but what beauty, majesty, and simplicity, in the colour of it, when the weather is calm and serene! The apartments of kings, decorated by the most skilful painters, are nothing when compared to the majestic simplicity of the celestial vault. When the eye has any time contemplated the beauties of the earth, it satiates and is tired; but the more we contemplate the heavens, the more charms we find.

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APRIL IX.

Use and Necessity of Air.

AIR is the element to which all this lower world owes its life, beauty, and preservation. All the changes we observe in the different beings our globe contains depend on air: It is absolutely necessary for the preservation of animals; for most of them would die in half a minute, if they were deprived of it; and the others could not support the want of it above two days at most. Not only terrestrial creatures, and those which fill the air, require that element, but it is absolutely necessary also to the inhabitants of the water; and, what is more, they require a change of fresh air as much as other animals. The birds, in order to fly, must be supported by the air; for which reason their lungs have openings, through which the air they breathe passes into the whole cavity of their bellies. This single circumstance discovers to us a profound sagacity; for the body of the bird being filled, and in a manner swelled by the air, becomes lighter, and more fit for flying.—Plants, even in order to vegetate and grow, require air, and have therefore a multitude of little vessels, which serve to draw it in, and by means of which even the smallest particles of them are provided with all the necessary juices.—Nothing would be more easy than to multiply proofs of the necessity of air. Let us dwell on one single circumstance only, which demonstrates it very clearly. If there was no air, there would be no twilight before sun-rise. It would come suddenly above the horizon; would appear the same as it does towards the middle of its course, and would not vary its appearance till the instant it would vanish entirely

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from our sight, leaving us in as total darkness as at midnight. The sun, indeed, would strike our eyes with a bright light, if there was no air; but it would resemble a great fire burning in an open country in the middle of the night. It would in some sort be day, as the sun and the objects immediately surrounding us would be visible to us; but all the rays that would fall on any bodies at a certain distance, would reflect in a direct line, and be lost in the extent of the heavens. Therefore, while the sun would be placed directly over our heads, we might still be in a sort of night, if there was no air between that globe and us. Let us draw together all the advantages the air is of to our earth.—It is of use to the life and breathing of living beings; to the motion of winged animals, and those which swim in water; to the propagation of sounds; to hold the earth in equilibrium with the other globes; to the formation of vapours, rain, and winds. How necessary is it also to make the earth fruitful, to favour the vegetation of plants, and disperse the bad vapours which exhale from different bodies! The sun could not furnish us with either heat or light enough, if our globe was not surrounded with air. Nobody could be heard, if the air did not set the organs of speech in play; if it did not transmit sounds, and act on the organs of hearing. How innumerable, then, in all respects, are the advantages which the air and winds procure to mankind? If we accustom ourselves to contemplate, with an attentive mind, the great object of the creation, we shall be naturally led to extol the works and the blessings of God. What may often make us neglect this duty, is, perhaps, our casting but a superficial glance over his works; and in enjoying his blessings, our hearts have not always been sensible how little we deserved them. Let us then, for our peace and our happiness, endeavour to become,

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with the assistance of divine grace, attentive and sensible spectators of the works of God: For to those who consider them thus, they become sources of pure and permanent joy.

APRIL X.

Different Soils of the Earth.

THE soil is not the same every where. The upper stratum is generally formed of a black, moveable rich earth, which being moistened by broken remains of plants and animal substances, becomes the nutritive support of millions of vegetables which enrich our globe. But even that stratum varies in quality. It is sometimes sandy and light, sometimes clayey and heavy, sometimes moist, sometimes dry, sometimes warmer, and sometimes colder. This is the reason why some herbs and plants grow naturally in certain countries, and require art and culture in others. The variety of soil also makes vegetables of the same kind differ in quality, according to the ground where they have been planted. In this instance, we again discover the wisdom of our Creator. If all soils were alike, if all were of the same quality, we should be deprived of many vegetables; because each species requires a soil analagous to its nature: Some require a dry soil, some a moist one; some require heat, others a colder soil; some grow in the shade, others in the sun; several grow in mountains, and many more in valleys. From thence it happens, that each country has a certain number of plants peculiar to it, and which do not grow in equal perfection in others. Let the alder be transplanted into a sandy soil, and a willow into a rich and dry earth, and it will be found, that those soils are not fit for these trees, and that it will agree with them better to plant

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the former near marshes, and the latter on the borders of rivers.—Therefore our Creator has provided for each species, by allotting to them the soil analogous to their internal constitution. It is true, that art can sometimes force nature to produce according to pleasure: But it is seldom worth the trouble; and, in the end, nature is found to have much the advantage of all the researches and labours of art.

The same variety that is observed in the soil of our globe is found in the characters of mankind. There are some whose hearts are so hardened, that they cannot profit by instruction. No motive can influence; no truth, however evident, can rouse them from their indolence—This character may be compared to stony ground, which no climate, nor the most careful cultivation, can render fruitful. A character almost as worthless, is that where levity predominates: Persons of this sort, it is true, receive the salutary impressions of religion and piety, but are discouraged by the least obstacle that comes in their way; and their zeal vanishes as easily as their good resolutions. In the minds of trifling, timid, weak people, truth and virtue cannot take root, because there is no depth. They resemble light and dry soils, where nothing comes to maturity, and where every thing dries up, as soon as the heat of the sun is felt; because they do not supply the plant with the nourishing juices it requires. But how happy those characters with whom, as in a good soil, the seeds of piety ripen and produce an abundant harvest of good fruit. On these several dispositions observed among men, depends more or less the effect the word of God has upon the heart. In vain the sower sows the best seeds, if the soil has not the suitable qualities; all his care is in vain. The purity and goodness of the seed cannot supply the natural defects of the soil. For when it is so hard and close that the seed cannot

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for the preservation of the
creatures, in situations
impossible to mere human
then be doing injustice to
my Creator, to doubt his
myself up to trouble and
sistence? Certainly, that
sects and to birds their
God who provides them
rest, in pits and rocks;
their food in different
will take care of me in
I have a perfect confidence
all that is necessary for me,
least likelihood of it; he will
refuge, where I may rest in

MARCH IV.

Winds and

WITH what violence the
how the winds roar in the
hold, how the clouds gather!
fly! what deluges of rain
earth! How terrible the
they tear up the largest oaks
palaces; they shake the foundations
and perhaps, alas, at this moment
ship is dragged into the abyss
the storm. The winds may
is underneath, and all around
sea rise mountains high.
are those unhappy people!
hands! How they shudder
rises to bury them in the deep
of the tempest abates, there
sands of families ruined; and
be plunged into the greatest

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blood.—In order to be able to lab
is that our blood should always
a matter infinitely thin and active
rous fluid. This fluid keeps the
brain and muscles in play, and m
city action and motion. But the
that is made of this matter would
and man would fall into languor
were not repaired. Food would
spread itself regularly through the
always in motion. The labour, t
head, the arms, or the feet, must
for a time, that the heat and th
spread over the exterior parts, m
only in assisting the functions
during the repose of the other pa
Sleep does us this important s
close of the day, our strength,
exercising since the morning, be
the vital spirits sink; the senses
we are invited to sleep, without
rest. As soon as we give way
restored and refreshed. The o
brain, and the labours of the bod
and the fatigued limbs acquir
This recruit is necessary to the
to the mind. It makes our lim
and flexible, and preserves in a
the parts of the body. It re-a
intellectual faculties, and spreads
our souls. How inexcusable the
for trifling reasons, for a vile
gratify their passions, deprive th
per time for sleep! They not
order of nature, an order establish
good, but they enervate the stre
dies, and bring on themselves a p
Why should we be mad enough
selves of a blessing, which our
equally and impartially grants

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enter, or so sandy that it cannot take root, or so full of stones that it is choaked up, it is impossible it should produce fruit.

To which of these do I belong? Perhaps my heart is not so hard as to resist every impression. If I know it well, it resembles those light soils which produce here and there some ears of corn, but which are seen soon after to wither. Good thoughts and salutary resolutions have often filled my heart: But how short has been their duration! Alas! I see plainly that this heart must change and be amended, that faith and virtue may produce good fruit, and that I may one day obtain salvation. But this change is not in my power. It is thy work, Divine Spirit! Assist me O Lord! Make me like the fruitful soil, ready to fulfil the duties of life. And, in order to bear fruit in abundance, make me fruitful in good works, preserving the gifts of thy grace in an honest and upright heart.

APRIL XI.

Necessity for Repose at Night.

LABOUR is without doubt necessary for man; he must indispensibly apply himself according to his situation and condition; and it is certain that great part of the convenience and comforts of life depend upon it. But, it must be allowed that human strength would soon fail, and that man would, in all respects, become incapable of making use of his limbs, and the faculties of his soul, if God did not continually supply him with the strength and activity necessary to fulfil the duties of his vocation. As we every day lose some of our juices, we should soon be exhausted, and fall into a mortal decay, by too great an exertion of our strength, if these spirits were not continually renewed and re-

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vived.—In order to be able to labour, it is necessary that our blood should always supply us with a matter infinitely thin and active, called the nervous fluid. This fluid keeps the springs of the brain and muscles in play, and maintains the bodily action and motion. But the continual waste that is made of this matter would soon exhaust it, and man would fall into languor, if these losses were not repaired. Food would not digest, nor spread itself regularly through the body, if he was always in motion. The labour, therefore, of the head, the arms, or the feet, must be interrupted for a time, that the heat and the spirits, which spread over the exterior parts, may be employed only in assisting the functions of the stomach, during the repose of the other parts of the body. Sleep does us this important service. At the close of the day, our strength, which has been exercising since the morning, begins to diminish. The vital spirits sink; the senses grow dull; and we are invited to sleep, without being able to resist. As soon as we give way to it, we are restored and refreshed. The operations of the brain, and the labours of the body, cease at once, and the fatigued limbs acquire new strength. This recruit is necessary to the body as well as to the mind. It makes our limbs more active and flexible, and preserves in a proper state all the parts of the body. It re-animates our intellectual faculties, and spreads a serenity over our souls. How inexcusable then are those who, for trifling reasons, for a vile interest, or to gratify their passions, deprive themselves of proper time for sleep! They not only disturb the order of nature, an order established only for their good, but they enervate the strength of their bodies, and bring on themselves a premature death. Why should we be mad enough to deprive ourselves of a blessing, which our heavenly Father equally and impartially grants to the rich and

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the poor, the ignorant and the learned, the high and the low? Why should we shorten our days, when a wise and good Providence has ordained sleep, as a means to prolong life? Why voluntarily deprive ourselves of the refreshing repose which sleep procures us? Alas! there may come nights, in which, far from tasting its sweets, we may pass restless hours in a bed of anguish, and reckon the tedious and painful moments; and, perhaps, we shall never know the value of sleep, till we wish for it again.

APRIL XII.

Size of our Globe.

IT is not so easy as we imagine to be certain of the size of our earth. There is indeed but one longitude, yet there are two latitudes, north and south. Both begin at the equator. The one extends toward the north, and the other toward the south, as far as the pole, either arctic or antarctic. But no one has yet been able to go as far as either poles, because the mountains of ice in Greenland and in the northern seas, have always obstructed the passage. However, thanks to the geometricians, we at present know nearly the size of our globe; and, according to the most exact calculations, the surface of the earth is nine millions two hundred thousand and eighty square leagues. The water occupies two-thirds of that space; so that what remains for terra firma is reduced to three millions and ninety-six thousand square leagues.

It has been calculated, that there may be at least three thousand millions of men upon the earth; but, in reality, there are not more than one thousand and fourscore millions; of which there are—

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In Asia, ...	650,000 000
In Africa, ...	150,000,000
In America, ...	150,000,000
In Europe	130,000,000

If, then, we suppose the earth is inhabited by one thousand millions of men, or thereabouts, and that thirty-three years make a generation, it follows, that, in that space of time, there die one thousand millions. Thus, the number who die on earth amounts to—

Each year, ...	30,000,000
Each day, ...	86,400
Each hour, ...	3,600
Each minute, ...	60
Each second, ...	1

This calculation must necessarily strike us. If the mortality is so great every year, and even every hour, is it not probable that he who reflects on it may himself be one of those which swell the list of the dead! It is at least certain, that it ought to lead us often to serious reflections. Now, at this moment, one of our fellow-creatures is going out of the world; and before this hour be passed, more than three thousand souls will have entered into eternity. What a motive for thinking often and seriously on death.

Prodigiously great as the earth appears, its greatness vanishes at once, when we compare this globe to the other worlds which roll over our heads. The earth is then, in comparison of the whole universe, what a grain of sand is to the highest mountain.

But how does this thought exalt Thee in our eyes! How inexpressible and infinite does thy greatness appear, O thou Creator of heaven and earth! The world and all its inhabitants are

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before Thee as a drop in the ocean, or as the light atoms which float in the air. And what am I, among these thousand millions of inhabitants of the earth! What am I before Thee, Thou immense, infinite, and eternal Being!

APRIL XIII.

Generation of Birds.

AT this season of the year there is a revolution in nature which certainly claims our attention. It is the time the birds lay, and hatch their young. This annual miracle passes in a manner before our eyes; and that it is really a wonder, which cannot be too much admired, the following reflections will convince us. In each fruitful egg, which has not yet been sat on, there is a spot (about the size of a freckle) visible in the yolk. In the centre of this spot there is a white circle, like a thin partition, which extends a little towards the top, and appears to join to some small bladders there. In the middle of this circle, there is a kind of fluid matter wherein the embryo of the chick is seen to float. It is composed of two lines or white threads, which appear sometimes to be separated from one another at their extremity; and between which a lead-coloured fluid is perceptible. The extremity of the embyro is contained in a little bag, surrounded by a pretty large ligament; and it is there that the navel afterwards shews itself. This ligament is composed partly of a solid yellowish substance, and partly of a fluid dark substance, which is also surrounded by a white circle. This is what has been observed in the egg before it is sat upon. After it has been above twelve hours under the hen, there appears in the lineaments of the embryo, which is in

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the middle of the little spot, a moisture that has the form of a little head, on which are seen little vesicles, that afterwards become the back bones. In thirty hours, the navel appears covered with a multitude of little vessels. The eyes also are then distinguishable. The two white threads, which, in re-uniting, have still left some space between them, inclose five little bags, which are the brainy substance, and the spinal marrow, which goes through to its extremity. The heart is then visible: but it has not yet been discovered, whether it is the heart or the blood that is first formed. Be that as it may, it is certain that the embryo of the chick existed before in the egg; and that, after it has been some time sat upon, they distinguish the back bones, the brain, the spinal marrow, the wings, and part of the flesh, before the heart, the blood, and the vessels are perceptible. At the end of thirty-six hours, the navel is covered with a number of vessels, separated from one another, by unequal spaces. According to all appearance, they existed before in the little spot, and are only made visible by the fluid matter which swells them. When the essential parts of the chick are thus formed, it continues to take new growth till the twentieth or twenty-first day, when it is able to break of itself the shell which contained it.

We owe these discoveries to some great naturalists, who, with the assistance of microscopes, have observed, almost from hour to hour, the progress of the formation and the hatching of the chick. However, notwithstanding all that we have drawn from their observations, there still remain many mysteries, which may never be discovered to us. How does the embryo come in the egg? and who gave it the faculty of receiving, by means of warmth (for that is all the hen communicates to it), a new life and being! What is it that puts the essential parts

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of the chick in motion? and what is that vivifying spirit, which, through the shell, penetrates even to the heart, and occasions its pulsation! What inspires the birds with instinct to multiply by a way common to them all? How do they know that their young are contained in the egg? What engages them to sit on the nest all the time necessary to hatch them? Questions these are which cannot be answered in a satisfactory manner. But the little we know of the generation of birds is sufficient to prove the wisdom of the Creator; as it can neither be attributed to a blind chance, nor to art assisting nature. God had the wisest reasons for ordaining that certain animals should not arrive at perfection, till after they come from their mother's womb; while others reach their full maturity in it. And it may be allowed, that whoever does not discover the hand of God in the production of birds, will not see it any where. For, if the profoundest wisdom is not visible in this, it will appear so in nothing.

O man, spectator of the wondrous works of God, adore with me the all-wise Being! Do not disdain to seek, in apparently small objects, the impression of his goodness, his power, and his ineffable wisdom.

APRIL XIV.

Prognostics of the Weather.

WINDS, heat, cold, rain, snow, fogs, drought, and other such alterations in the temperature of the air, do not always depend on causes regular and necessary. There are, however, some signs in nature, which, in some degree, foretel the weather. The position of our globe, in respect to the sun, which is known to us in the four sea-

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sons of the year, the changes of the moon, the precise moment of which can be determined; the influence those celestial bodies, and all the planets of our system, have upon the heat, the cold, the motion, and the stillness of the air, are so many immutable laws, upon which may be established several prognostics of the weather. The consequences drawn from them are so much the less to be despised, as they are founded on experience, and that it is by the rules of analogy that the future is judged of by the past. It is true, that a thousand accidental circumstances may occasion alterations which we had no reason to expect. But it must be considered that these accidental circumstances are of short duration; and if they occasion any change in the ordinary course of the temperature of the air, it is only for a little time, and in some particular places.

That, in general, the change of weather is so regular that it may be foreseen, is what our observation may prove to us every year. We are seldom mistaken in supposing that the north and east winds generally bring cold, the south heat, and the west rain; that, during a north-east wind, it rains in summer, and snows in winter. We may with equal probability conjecture, that when the morning sky is red, there will be wind or rain in the afternoon: and, that the evening red, when it is not copper colour, promises fair weather next day. The weather in spring foretels what it will be in summer. If there are many fogs in spring, it is very likely that the summer will be rainy. If there are great floods in spring, there will be great heat, and many insects, in summer. When there have been storms in spring, there is nothing more to fear from ice and night frosts.

But, supposing it was utterly impossible to foresee the weather, we may be perfectly easy

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in that respect. The variations of weather (when considered in the whole), are according to constant rules, laid down by Providence with much wisdom; and we may rest secure, that the weather, however bad it may appear, will nevertheless be advantageous to the earth, and promote its fertility. In every alteration of the climate, let us trust to that God whose purposes are always wise and beneficent, without whose will there could be neither heat, cold, rain, drought, tempest, nor calm, and who turns to the good of the earth and of his creatures, even those phenomena which seem to be hurtful. All the ways of Providence bear marks of his goodness. All his paths are mercy. Wisdom and beneficence are manifest in all dispensations.

APRIL XV.

The Situation of the Sun.

GOD has appointed a situation for the sun, which perfectly suits the nature of that body, and the uses for which it is designed. He has given it a certain size, and placed it in a space proportioned to the course it is to perform. He has put it at a proper distance from the planets upon which it was to act; and this position, appointed for it so many thousands of years ago, it still preserves, without ever deviating from it, because, in reality, the least deviation would occasion the greatest disorders in nature. Most certainly, nothing but unlimited power could perform such a wonder. God alone could produce this immense globe, place it in its proper sphere, mark its limits, determine its course, subject it to proper rules, and maintain it invariably in the position and order prescribed. What wisdom and goodness shines in this plan, both in respect

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to the whole universe, and to our earth in particular, with all its creatures! The burning rays, which proceed from a globe of five a million of times larger than our earth, must have an inconceivable force, if, in falling, they were to remain close to one another; but, as they separate more and more, in proportion as they remove to a distance from their common centre, their power diminishes in proportion as they diverge.——Our earth, placed in a spot where those rays would have been too numerous, or too near, could not have borne the intense heat. Placed towards the extremes of the solar world, it would only have received a faint light, and too little warmth to ripen its fruits and productions. The sun is then in the exact spot it ought to be. It can now communicate to our world sufficient light and heat to penetrate into and vivify the earth with its beneficent rays, to clear the atmosphere, and to produce all those effects, without which there would be neither dew nor rain, snow, hail, fogs, clear or serene days. Placed as it is, it causes the regular changes of day and night, as well as the different seasons of the year, and varies in each of them its influence or effects.

It is not only to the sun, but also to the other planets, to the fixed stars, and all the bodies which belong to our system, that God has allotted a place conformable to their nature, and suitable to the end he proposed in creating them. To me, who am nothing in comparison of the sun, the Lord has vouchsafed to allot the place and situation which, in all respects, suits me best. May I but fulfil the duties of my station with as much exactness and fidelity as the sun acquits himself of his important offices, according to the invariable laws which were prescribed to it from the first instant of its creation! May I, in the place I fill, and in proportion to my powers, be as useful to the world, share with my fellow-creatures the

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advantages I enjoy, communicate to the ignorant what knowledge I have, support or strengthen the weak, and spread with a liberal hand, among the poor, the riches I possess.

APRIL XVI.

Permanency of Corporeal Beings.

NOTHING in nature perishes; and, from the beginning of the the world to the present moment, there has not been a grain of sand, nor an atom annihilated. The first forests, which the powerful word of God produced, were adorned with an innumerable multitude of leaves. Those fell, withered, corrupted, and ceased to be leaves; but the parts which composed them still remain. They have been converted into dust, mud, or earth; but they are not annihilated. The matter of which the first leaves and herbs were formed subsists still at this day, and has lost nothing of its essential parts. The plants which now flourish will exist, as to their parts, as long as the world shall last. The wood we burn ceases indeed to be wood, but its parts do not cease to exist. They are dispersed into ashes, soot, and smoke, but they are not annihilated. The kingdom of nature is liable to continual change; all dissolves, and all regenerates, but nothing finally perishes. Let us not judge by appearances. When there happens any revolution, any disorder in nature, we are apt to believe that many things are totally destroyed: it is an error.—They are only differently modified, and become materials for the composition of other beings. The water which rises in vapours does not perish: it decreases in one place, to increase in another.—What uninformed persons consider as total destruction, is, in reality, but a mere change of

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parts; and the world, considered in the whole, is just now what it was the first day of the creation, although a multiplicity of parts which compose it have gradually undergone very considerable alterations.

This leads me to reflect on my own body, and the change it will experience in the grave. It is true, it will entirely corrupt, but will not be annihilated, and the essential parts which compose it will always subsist. The persuasion of this truth is sufficient to guard me against the fear of the grave and corruption, and, at the same time, to confirm the hope of a resurrection in my soul. Why then should my heart be troubled, why shudder at the thought of the grave? That which will be shut up there, it is not me; it is my earthly habitation. I myself cannot be destroyed. All my members are numbered, and will be preserved. What I have been, I shall be hereafter: and I shall live for ever and ever.

The continual duration of corporeal beings may lead me to conclude, with much probability, that my soul also will be immortal. Since none of the earthly parts will be annihilated, is it to be presumed that my soul should be the only created thing that is to be destroyed? No. The whole corporeal world would sooner perish than one soul redeemed by Jesus Christ.

APRIL XVII.

The Use of Rain.

IN the truest sense of the word, rain ought to be called a present from Heaven. The blessings our heavenly Father pours upon us, by this means, are equally abundant and necessary for us. As the consequences of a continued drought would be fatal to us, so the advantages are equal-

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ly precious which the refreshing showers afford. Who can describe or know all the advantages which accrue from them. But if we cannot give an exact account of them, we may at least reflect on some of the most considerable. The heat of the sun acts without interruption on the different bodies on the earth, and continually exhales thin particles from it, which fill the atmosphere in the form of vapours. We should breathe these dangerous exhalations with the air, if now and then they were not carried off by the rain, which beats them down to the ground, and thus clears and purifies the air. It is no less useful in moderating the burning heat of the atmosphere; and the reason is very evident: for the nearer the air is to the earth, the more it is warmed by the refraction of the rays; and the farther it is from us, the colder it is.——The rain that falls from a higher region brings to the lower atmosphere a refreshing coolness, of which we always feel the agreeable effects when it has rained. It is also to the rain we must partly impute the origin of fountains, pumps, lakes, and consequently rivers. Every body knows in what abundance we are supplied with these several sources of water in the wet and rainy seasons; whereas they evaporate during a long drought. But, to feel how useful and necessary rain is, it is sufficient to observe how the earth and vegetables languish for want of these fruitful showers, without which every thing would decay. Rain is in many respects the food of vegetables. It wets and softens the earth, which is dried up, and in a manner petrified by the heat of the sun. It circulates in the finer veins, and in the vessels of plants and trees, and conveys to them those beneficial juices which preserve their life, and give them growth. When it pours on mountains, it sweeps from them a soft rich earth, which it deposits in the valleys where it falls, and which it manures.

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Yes, Lord! thou hast planned all with wisdom, and the earth is full of thy goodness. Such is, without doubt, the conclusions that we must all draw from these reflections. And if, from these we are led to adore and bless God, let us pursue the subject, that it may make a deeper impression on our minds.

What finer object can be presented to our sight than a clear and serene sky? Is not that beautiful blue vault extended over us sufficient to fill every heart with admiration and delight? But all the beauties of the sky would disappear, if, by the direction of the winds, the clouds should come and draw a thick curtain before us. What are the sentiments such a revolution should create in us? These are, at least, what it ought to inspire:—However beautiful this scene which we contemplate with such delight, there are some incomparably greater, which no cloud can deprive us of, and which would make us ample amends for the loss of all others. For what are all the beauties of nature, compared to the beauty of that Being, in whose contemplation alone an immortal spirit can find felicity!—It is not without design that God sometimes deprives us for a while of those things which give us most pleasure. He wishes to teach us to seek our happiness in him, and to consider him as our sovereign good. Besides, those very privations, are they not often compensated by many outward advantages? Those clouds which conceal from us the beauty of the sky are the sources of beneficent rains, which render the earth fruitful. Let us remember this; and every time that adversity makes our days gloomy and melancholy, let us be persuaded that even these misfortunes will become, in the hands of our heavenly Father, instruments of future happiness. Let us also consider rain as the image of the gifts of fortune: for, beneficial as moderate rains may be, they are equally hurtful, if they last too long,

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or come unseasonably. So it is in respect to earthly goods. Their too great abundance might be the cause of our destruction. Let us therefore thank our heavenly Father for refusing us gifts which we might afterwards find to be real punishments. Let us, then, learn to be content with all the dispensations of a wise and gracious Providence in the government of the world. God only can know the manner in which his blessings can best be bestowed. He sendeth forth his commandments to the clouds, and they fly to execute the will of their Creator. Shall man dare to undertake to direct their course, though perhaps the least considerable part in the ordinance of the world? How then can we be rash enough to blame the ways of Providence on much more important occasions?

APRIL XVIII.

The Breath.

OF all the functions of animal life, breathing is one of the principal and most necessary: without it there would be no possibility of expelling the saliva and excrements, or getting rid of superfluous humours by perspiration. Even speech, and the several inflections of the voice, require breathing. It is of use to the smell; to mix properly the chyle with the lymph and the blood; to give to the latter its red colour; and perhaps also to keep up and renew the animal spirits, by the air mixed with the blood. It is certain that we could not live an instant, if we were deprived of breath. But from whence proceeds this source of life? Our lungs are, properly speaking, the organs by which we draw in and let out air. This intestine resembles a large purse, at the top of which is fastened a pipe, through which the air penetrates

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into a number of little vessels of different sizes, which form the interior texture of the lungs. When the air is pumped into the lungs, the belly swells, the sides rise, and the lower part of the sternum comes forward. During the expiration, on the contrary, the lower part of the belly sinks in; the side sinks, and the sternum withdraws towards the back. That this mechanism may be conveniently executed, the Creator has disposed the interior parts of the body in the wisest manner. More than sixty muscles are continually in motion to procure breath, by dilating and contracting by turns the lungs. Nothing can be more admirable than the wind-pipe. It is covered with a valve, which closes it exactly at the moment of deglutition, and prevents, by that means, the food from passing into it, or an interruption of breathing. There are not less wonders observable in the lower parts of this organ, in the branches of the wind pipe, in the vesicles of the lungs, in the distribution of the veins and arteries, which every where accompany the bronchial veins, and the vesicles; in order that the blood they contain may receive on all sides the impression of the air.

It is our duty to bless our Creator, that, after having given us the faculty of breathing, he has, by his goodness, hitherto preserved our health. What emotions of gratitude and adoration ought to arise in our souls, when we consider that, in each minute, we breathe twenty times, and consequently 300 times in a quarter of an hour! A thousand accidents might happen, to interrupt, and totally stop this faculty of breathing. How many hurtful things might enter into the wind-pipe while we eat and drink; or even in our sleep, which would be instant death? If thy providence, O Lord, did not deign to prolong our breath; if Thou didst not prevent the fatal consequences of our imprudence and neglect, we should have

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been long ago deprived of life. But have we felt all the gratitude due for these continual marks of thy goodness? Breathing is one of those blessings we enjoy every instant, without, perhaps, remembering that it is to Thee we are indebted for it. It would, however, be very just and right that we should sometimes think of this blessing, which we continually receive; and if we accustomed ourselves to be more attentive to the particular and daily blessings, we should also contemplate with more delight the whole of the works and wonders of God, and be more sensibly affected by them.

APRIL XIX.

Proofs which the Works of the Creation furnish us of the Goodness of God.

THE most common and most important phenomena which we see on the earth, or in the air, tend evidently to the service and good of the animal world. All that we see around us, over our heads, or under our feet, serves for our support and enjoyment. What is more necessary for the preservation of life than food? The ground is therefore covered with it. Grass, roots, fruit, for the support of man and beasts, are spread over the surface of the whole earth, in such a manner, that there is scarce a place where animals cannot find their proper food. God has not even confined himself to the supplying of our wants and sustenance only, he has deigned to furnish us also with what is agreeable and convenient. If nothing more was required than merely supporting life, water and the most common roots would be sufficient. But with what liberality has the Creator furnished us with the greatest variety? He does not act towards us, like a penurious

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miser, who only gives to those who depend upon him what is necessary to keep them from starving; but, like a generous host, he spares nothing to treat his guests, and to provide with profusion whatever can give them pleasure. Such is the munificence of God towards every living creature. There is scarce a shrub upon the earth, a plant, an herb, a piece of water, or a marsh, that does not serve for a dwelling and food to some living creature. On a tree, for example, there are, besides fruit, leaves, bark, and wood. Each of these feeds an innumerable multitude of creatures. Caterpillars feed on leaves. Certain worms live on the bark. Others neglect the leaves and bark to lodge in the wood. Thus, through all nature, there is scarce any thing that is not useful to some living creature. What must therefore be the beneficence of that God, who forgets not any being made by his hand, nor disdains to watch over them, and supply their wants? What is there more pleasant than light? "Truly the light is sweet, and a pleasant thing it is for the eyes to behold the sun." Its rays fill all the immense expanse of the heavens; and, as long as day lasts, the eye is surrounded on all sides by them. It partakes of this universal good, and enjoys the delightful and varied scene of the creation. Light discovers to us all the riches of the divine works. Without it, nature would be to us a desert, and its innumerable beauties would be for ever unknown to us.

With what goodness has God provided for the advantage of our senses? For example, he has chosen the mildest and properest colours to please and refresh the sight. Experience proves, that blue and green reflect the rays which least hurt the eye, and they are what we can longest bear. For that reason, Divine Goodness has clothed the sky with blue, and the earth with green, two colours which agree with our eyes.

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They are lively and gay enough to strike us agreeably, and yet mild enough not to fatigue or offend the sight. They have, however, variety of shades, enough to distinguish objects from one another, and prevent a too great uniformity. Besides plants of very different greens, the earth produces the most beautiful flowers, which not only delight our eyes with a thousand and a thousand different colours, but embalm the air also, and please our smell with the most delicious perfumes. Even the ear is not idle. It is charmed to hear the songs of the birds, who fill the air with their melodious notes.

With a heart full of gratitude and joy, I exalt Thee, O God! and celebrate thy goodness. Lord, how great is thy mercy! How tender and gracious thy fatherly protection! None of thy creatures are hid from Thee. Thou despisest none of them. All, without exception, are objects of thy providence; and Thou watchest over them. Therefore shall thy beneficence be for ever the object of my meditations. My soul shall never cease to bless Thee; and I will rejoice in the remembrance of thy goodness.

APRIL XX.

Pleasing Effect of the Heat of the Sun.

AT the approach of spring, there are revolutions before our eyes, which must fill every attentive observer with astonishment. Nature gradually recovers the life she seemed to have lost in winter. The earth is clothed with verdure. The trees are covered with blossoms. On all sides are seen new generations of insects, and other animals, coming out, rejoicing in their existence, and endowed with a thousand different instincts. Every thing is animated. Every thing

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revives. And this new life, which appears in the noblest parts of nature, is produced by the return of warmth, which awakens animals and plants, and puts their renewed strength in motion. We owe this admirable revolution to the sun, which is the source of life, sensation, and joy, as its salutary and enlivening rays are spread over all nature. The seeds feel its effect, and open in the bosom of the earth. It is from thence that the plants and vegetables shoot, spring up, and grow. Its approach revives and strengthens animals. Every living creature that has breath or feeling; vegetation also, feels the benign influence of that majestic globe. How would it be, if we were deprived of the light and heat of the sun? How melancholy would the face of the earth appear, if an uninhabitable desert? Into what a lifeless state would most creatures fall, and how wretched and languid would such existence be? What a source of joy and gladness would the heart of man be deprived of, if he could not enjoy the rays of the rising sun, or the light of a serene day? Nothing could compensate for the loss of it. The mildest night, the gentlest artificial warmth, could not supply the place of that vivifying virtue which the light of the sun communicates to every being, and which has a salutary effect, very different from that of earthly fire. Men and animals know and feel it. A valetudinarian, shut up warm in his room, with every possible assistance, will not gain as much strength in many weeks as he would do in a very short time from the warmth of the sun in the fine weather of spring. Plants forced in hot beds, never gain such a degree of strength and consistence, as those which grow in the sun. In the latter, every thing combines for the perfection of plants and animals; whereas, in artificial heat, we see nothing but the weak and languishing efforts of an ineffectual substitute. But would the sun exist,

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and could it communicate light and heat to us, if God, the Creator of all things, had not formed it, and given it the power of shedding over the whole earth its quickening virtue? It is from the Lord we receive all the blessings which are derived from the sun. It is he who created it, who rules its course, and who preserves its light and splendour. Each morn he causeth it to appear again: and in each season makes us feel its happy effects. Without him, there would be neither sun, nor light, nor heat, nor spring. Let us then raise our souls to him, to the Creator of the sun. Its beneficent warmth, its beautiful and clear light, leads to Him, the Being of beings, the Source of every blessing, the Father of light.—The Pagans were too blind to acknowledge God as author of the sun. They stopped at the effects, without knowing the cause. But we know there would be no sun, if he did not exist; that it would neither give light nor heat, if not ordained by God. We know that vegetation, increase, growth, all the blessings which surround us, all our agreeable sensations, all that charms or delights us, proceed from him. The sun is but the instrument of his goodness, the minister of his will, the herald of his greatness.

APRIL XXI.

Relation that all Creatures have with one another.

THE prodigious number of creatures there are upon the earth, is, in itself, well worthy our admiration; but what must still more strike us, is the proportion between all these, and the wise chain which links this infinite multitude of different beings in such a manner, that they form but one regular and perfect whole. The extent of the animal creation is incomprehensible, and

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yet all of them find food sufficient. No species, however few there are of them, no individuals, however persecuted they may be, are ever extinct. It is true, that many serve as food to others, but the number of beasts of prey is not considerable. Most of them are solitary, and do not much multiply. Those even that are pretty numerous, are content with little food, and cannot obtain it without much art and trouble. Several of them have enemies which prevent them from multiplying too fast; or else the weak and timid animals supply in number what they want in strength, and escape their persecutors by all sorts of stratagem and cunning. It is also observable, that, for the preservation and multiplication of species, there is an exact balance between the sexes; so that there is no animal which cannot find its mate. The mineral kingdom serves for the preservation of the animal, and they both tend to the good and benefit of mankind. The most useful plants, such as corn, grow every where, multiply the easiest, and are the least liable to spoil. The animals which are most necessary to mankind are scattered every where in abundance. The productions of the different climates are suited to the particular wants of mankind. Thus the hottest countries abound in cooling fruits. In countries liable to great drought, there are plants and trees, which are, in a manner, springs of water, and which provide enough to quench the thirst of men and animals. Where wood is wanting, there is a great quantity of peat and turf found. If there are countries deprived of rain, and other sources of fertility, they are made amends for it by fruitful inundations, like that of the Nile in Egypt. In mankind also, there is the most exact proportion between the sexes. The proportion between male and female is nearly equal. The number of males to that of females is generally 26 to 25. In civil

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society, talents and blessings are so admirably distributed, that, as each individual may be happy, according to his circumstances, so there is nothing that is necessary wanting to society in general. If the inclinations and dispositions of men were not so varied; if their tastes and tempers did not make them embrace different kinds of life; if there was not so much variety in their genius, their way of thinking, in their beauty, riches, and other outward circumstances, human society would soon become a melancholy desert. There is no rank of men who can do without others. Each country has its peculiar advantages: and, if they were common to all, there would be neither connection or commerce among men. In a word, on whatever side we cast our eyes under heaven, we every where find the most admirable harmony and proportion. Notwithstanding the infinite variety of creatures, and the continual interruption of many of the laws of nature, it appears that, in this immense universe, all is perfect, all is planned and contrived for the general good, all is in the most regular and exact order. On whatever side I cast mine eyes, I see nothing but the wisest and most delightful harmony. It shines on all sides. It embellishes every thing. Nothing is unconnected. Every thing combines to the same end. The whole is linked together with wonderful art.

Wise Author of Nature! We should be unworthy to contemplate the magnificence and harmony of thy works, if we did not adore Thee with the most profound admiration. Teach us, above all things, to feel and to adore that ineffable goodness, which has ordained every thing in the manner most beneficial to thy creatures.

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APRIL XXII.

The integral Parts of Water.

WHEN we drink water, we think we enjoy a pure and simple element: we are mistaken; for the naturalists assure us, that each drop of water is a little world, where the four elements and the three kingdoms of nature unite. There is scarce any water which is not full of heterogeneous matter, very plainly visible when distilled or filtered. However incredible this may appear, it has been proved beyond all doubt, by the most exact and certain experiments. Besides its elementary parts, the water contains several earthy particles: such, for example, as belong to the mineral kingdom, chalky earth, saltpetre, and different kinds of salts. It cannot be doubted, if we consider how many earthy particles the water must meet every where (both in the air, and on the ground), parts that it dissolves, or draws off and carries along with it. Water also contains inflammable or sulphureous parts, which shew themselves when it corrupts. Without these fiery particles, it would become a solid and compact body; for as soon as all its heat is taken from it, it condenses, becomes heavy, and acquires the hardness of ice. Lastly, that water is also impregnated with air, will be easily acknowledged, if attention is paid to what happens when it begins to boil. Common water contains particles of earth, salts, fiery particles, and air; consequently it may be said, with truth, that all the elements meet in a drop of water. But are there also plants and animals in it? It certainly contains the principles of vegetation, as all the plants draw their nourishing juices from water, and can only grow and thrive from thence. As to the animal kingdom, it is evidently distinguished

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in water. Without mentioning fish, and other aquatic animals, with which it is peopled, there is not a single drop of water without its inhabitants, as may be discovered by a microscope. It is also known how fast insects breed in stagnated water; the seeds of which are undoubtedly concealed in the water; although outward circumstances hinder them sometimes from coming forth. All this is well calculated to make us reflect on the wisdom and goodness of the Creator. It is not by chance that water is composed of so many parts. It is true, it would be one of the purest drinks, if it was a body absolutely simple: but, on the other hand, its medicinal qualities would be reduced almost to nothing. If we reflect on the manner in which water nourishes plants, it is easy to presume that it communicates the little nourishment it contains, in the same way to men and animals. Water is not very nourishing in itself, but being very subtle, it dissolves the nutritive parts of food, serves them as a vehicle, and conveys them into the very smallest vessels. It is consequently the most wholesome drink; that which men and animals can least dispense with; and its salutary virtues are experienced on many occasions, even when all other drink would be hurtful to the health. What therefore ought our gratitude to be at every glass of water we drink! With what wisdom God supplies our wants! He has prepared our food, our drink, in the manner best suited to our nature, and best calculated to preserve health and life. He has communicated a beneficent power to the most ordinary and most necessary sustenance.

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APRIL XXIII.

The Propagation of Plants.

IN general, vegetables spring from seed; and in most plants it is the flower or blossom which produces the seed, and makes it fruitful. Almost all flowers are folded up in a bud, where they form themselves secretly, and are guarded by their coat, and outside leaves. Then, when sap flows in abundance, particularly towards spring, the blossom grows large, the bud opens, the coat falls off, and the flower appears. At the outside some very small thin leaves are seen of different colours, which serve to defend the organs of fertility, and perhaps also to form the nourishing juice which enters into those parts. But it is, properly speaking, in the middle of the flower that the fruitful organs are found. There is a thread in it, or a little pillar called *pistil*, which rises pretty high, particularly in tulips. Round the pistil are the *stamina*, with heads at the top of them, containing a prolific dust of different colours. These stamina are properly the masculine organs, designed to make the seed fruitful, and the pistil is the female part of generation. It is in a manner the womb which receives the prolific dust.

Vegetables propagate also by ingrafting. From a tender branch of a tree, when in sap, they take an eye or a beginning of a branch, with a part of the bark, and they ingraft it into another tree; that is to say, they insert this eye between the bark and the wood, after which they gently tie up the whole, by rolling worsted two or three times round it. From that eye there comes a branch, which is of the same species as the tree from whence the eye was taken, though the tree

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into which it is inserted (and which is called *wild stock*) should be quite another sort. Trees and other woody plants are also perpetuated by slips. From a willow, for example, they take a slip, that is to say, a single stick or branch, and put it in the ground, after having cut off the little branches, that it may not in the beginning take too much sap. Roots soon shoot out of it in the places where it had beginnings of branches, and it becomes a tree.

Lastly, Vegetables also propagate by roots; but these must have eyes, or they will not shoot. Certain plants cast all around them trains, or long strings, which have knots or eyes in them. The knots lengthen their fibres in the ground, and become so many new feet, which may be separated from each other, to make so many more plants. The root even is a sort of eye, in which the plant is inclosed; and it has between its leaves little eyes, so that it may also be propagated by the leaves, when the little eyes or roots remain fastened to them. What a train of causes must operate to produce vegetables, to preserve and propagate them. Supposing even that the seed pre-existed, what art does it not require to open them, to give growth to the plant, to preserve and continue the species? The earth must be a fruitful mother, in whose bosom plants may be placed and nourished conveniently. Water, which contributes also to the nourishment of plants, although in a less degree, must be composed of all those plants which are best calculated to make them shoot and grow. The sun must put all the elements in motion, and by its heat make the seed spring up and ripen the fruit. It was necessary to form a just balance and proportion between the plants, in order that they should neither multiply too fast, nor be too few in number. It was necessary that the texture, the vessels, the fibres, and every part of the plant, should be so disposed,

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that the sap, the nourishing juice, should penetrate into it, circulate, digest, and prepare itself in such a manner that the plant should receive the proper form, size, and strength. It was necessary to fix exactly what plants were to spring up of themselves, and what were to require the care and culture of men. The work of the generation and propagation of plants is therefore so complicated, it passes through so many working wheels, as makes it impossible to discover the long train of causes and effects which produce it.

In all this I acknowledge thy wisdom and goodness, O adorable Creator! What other than Thou, could communicate to the elements the necessary virtue or power to perpetuate vegetables. It is Thou who hast given to the sun a proper size and heat to act upon our earth, and to make it feel its happy effects. It is Thou who hast created the constituent parts of which plants should be composed, and dispersed them in the air, the water, and the earth. It is Thou who hast fixed the laws of motion; who formedst the atmosphere, and thus produced rain, fogs, and clouds. It is Thou who quickenest the seed, and givest existence and growth to vegetables. Every year, by thy order, the earth again produces its plants. Every spring Thou renewest the face of nature, and crownest the year with thy blessings. Let the earth, as well as the heavens, declare the glory of thy great name, now and for evermore!

APRIL XXIV.

Variety observable in the Features of the Face.

IT is a very evident proof of the adorable wisdom of God, that, though the bodies of men are so like each other in essential parts, there is still so great a difference outwardly, that they can

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easily be distinguished, without any mistake. Among so many millions of men, there are not two perfectly alike. Each person has something peculiar to himself, by which he may be known, particularly his face, voice, and language. The variety of countenances is so much the more wonderful, as the parts which compose the human face are but few, and are all disposed on the same plan. If a blind chance produced every thing, the faces of men would be as like as eggs laid by the same hen, or balls melted in the same mould, or drops of water out of the same river. But, as that is not the case, we must acknowledge on this occasion, as on every other, the infinite wisdom of the Creator, who, in varying the features of the human face so wonderfully, has manifestly had the happiness of mankind in view: for, if they resembled each other, so as not to be distinguished, it would cause continual inconveniencies, mistakes, and frauds, in society. We should never be sure of our lives, nor of the quiet possession of our property. Robbers and highwaymen would scarce run any risk of being discovered, if they could not be known again by the features of their faces, or by their voices. Adultery, rapes, and other crimes, would go unpunished, because the guilty could not be discovered. We should be every moment exposed to the malice of the wicked and envious, as we could not guard against surprises, frauds, and misdemeanours. What uncertainty would there be in the execution of the laws, in all sales, transfers, bargains, contracts! What confusion in trade! What frauds and subornments in regard to witnesses! Lastly, uniformity and perfect resemblance of faces would destroy most of the charms of society, and considerably diminish the pleasure we find in conversing with one another. Variety of features, therefore, was to enter into God's plan of government. It is a

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striking proof of his tender mercies toward us; and it is evident, that not only the general construction of the body, but also the disposal of the several parts, has been done with the greatest wisdom. We behold every where variety joined with uniformity, from whence results the order, proportion, and beauty, of the human body.

APRIL XXV.

God's universal care of his Creatures.

EVERY creature that lives in the air, in the water, or upon the earth, has its part in the care of a Divine Providence to which they owe their preservation. All the different beings live and grow, and multiply, each in its way; and, according to its powers, each fulfils the design for which it was placed upon earth. Animals void of reason are endowed with organs, strength, and sagacity, suitable to their several destinations. Instinct warns them of what might be hurtful or dangerous; and enables them to seek, to distinguish, and to prepare, the food and habitation proper for them. All this is absolutely involuntary. It is not the result of reflection or choice. They are irresistibly led on by a propensity; which a Superior Power has given them for the preservation of their animal life. They find the food and the retreats convenient for them; and no species of animals is destitute of what is necessary for its welfare and sustenance. Men are of a more excellent nature, but they are born in a more helpless state; and they require, beyond comparison, more assistance than most other animals; their wants, their faculties, their desires, are more numerous and greater; they are therefore distinguished by greater blessings, and more marked attentions of Providence.

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The earth, the air, and the water, the clouds, and the light of the celestial globes, contribute more abundantly, and in a more varied manner, towards the preservation of man. God dispenses his blessings to all intelligent beings with impartial love. He has placed the irrational creatures under their command, in order to make them serve for the support and convenience of man. It is worthy our particular attention, to observe, that every part of our globe, which is inhabited, furnishes sufficient food for the creatures that live upon it. Admirable effects of Divine Providence! not only the fertile bosom of the earth, but also the vast plains of the air, and the depths of the sea, abound in food proper for the maintenance of the innumerable multitude of animals that live and move in these elements. The treasures of Divine Goodness are equally inexhaustible. The provision God has prepared for all his creatures satisfies their wants, and can never be exhausted. The world does not decay: the sun returns with its accustomed light and heat: the fertility of the earth never diminishes: the seasons succeed regularly; and the earth never fails to pay its annual tribute of provision, for the preservation and support of its innumerable inhabitants. Whether we consider the continuance, or the profusion, or the variety of the means of sustenance, which nature every where provides, we perceive, throughout, the traces of a beneficent and universal Providence. All that surrounds us, and serves to sustain and procure us the sweets and pleasures of life, are so many visible means, so many channels through which our invisible Benefactor continually dispenses his favours. The agents of nature are the ministers which fulfil the designs of his Providence. The world is his magazine, and we take out of it all that is necessary for us. It is to his goodness, it is to his tender mercies, we are indebted for it.

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"Father of all beings, how extensive are thy mercies, how great, how inexpressible! It is in Thee we live, we move, and have our being; and Thou sustainest all things by thy mighty word: at thy command, the dew moistens and refreshes the thorn as well as the cedar. The lot of mortals is in thy hand; they are only happy through Thee. Thou art their sovereign good; and thy paternal cares are over all mankind. Thy impartial goodness causes the sun to rise upon the unrighteous, at the very moment even in which he sins. It is by thy command that the zephyr cools and refreshes us; that the rose embalms the air with its perfume; that the most delicious fruits please our palates; that the dew of heaven revives us. Thou proportionest thy gifts to the wants of thy creatures: thou makest the righteous to feel the sweet and salutary effects of thy grace: thou givest to the bee its nectar in the flowers; to the worm a drop to quench its thirst: to the world the rays of the sun. O Thou! who possessest sovereign felicity, and dost not disdain to communicate happiness to the poorest insect, which could not exist a moment but by thy will; permit me to raise to thee a new hymn, and deign to accept my weak lays! Penetrated with joy and gratitude, I will sing to thy name, magnify thy goodness, and pay Thee due adoration, praise, and glory."

APRIL XXVI.

Flowers of the Month of April.

THE nearer we approach that charming month, which presents to us the country, the fields, and gardens, in full beauty, the more we see the wild and melancholy appearance of nature wear off. Each day brings forth some new creation.

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Each day, nature draws nearer to perfection. Already the grass begins to shoot, and the sheep run eagerly to feed. The corn begins to appear in the meadows, and the gardens become cheerful and pleasant. Some flowers shew themselves here and there, and invite the florist to observe them. The sweet and modest violet is one of the first productions of spring. Its smell is so much the more agreeable, as we have been so long deprived of those delightful perfumes. The beautiful hyacinth rises insensibly in the midst of its leaves, and shews its little flowers, which equally delight the sight and smell. The imperial crown-flower casts around it a multitude of starry leaves. Its stalk rises high, and its red and yellow blossom, shaped like a bell, and inclining towards the earth, forms a sort of crown, with a tuft of leaves at the top. From the midst of its leaves the auricula raises its flower, which imitates the richness of satin and velvet. Its elegant form and sweet perfume make amends for its want of stature. The tulip comes out more slowly. It does not yet venture to open, because the night air, or cold rains, might spoil the beauty of its colours. The ranunculus, the pink, and the rose, do not blow, till milder days allow them to appear in full beauty. An attentive observer will find in this many reasons to admire the wisdom and goodness of his Creator. It is for very wise purposes, that, at the return of spring, each plant begins, precisely in the time and the order prescribed to it, to open its leaves and blossoms, and to prepare every thing for the production of its fruits. There is a constant succession of vegetables from the beginning to the end of the year. Some are scarce visible, when others prepare to appear; and those are followed by several hundreds of others, which spring up, each in its turn, and at the appointed time. Whilst the fruit of one plant

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is ripening, nature prompts another to propagate, that its fruit may be ready by the time the former has fulfilled its destination. Thus nature continually offers us an agreeable succession of flowers and fruit. She leaves no void; and, from one end of the year to the other, she watches over the successive generations of plants. But why has not our Creator given us the enjoyment of more plants at a time? The reason of it is evident. For how would it be, if all the flowers and fruit came at the same time? Would there not be seasons entirely without vegetables? Should we not be deprived of the pleasure which those agreeable and progressive changes procure us, by preventing the disgust inseparable from a sameness? How many plants would perish, if they were now exposed to the cold nights which are sometimes felt even in spring? Would so many millions of animals and insects find subsistence, if all the plants blossomed and bore fruit at the same time? The beneficent Creator wished to provide for our maintenance and pleasure. Those two views could only be fulfilled, by ordaining that nature should not produce all the vegetables at the same time, but successively, and by degrees.

The spring flowers, which I am now admiring and contemplating, lead me naturally to think of the early season of life. Let lovely and sprightly youth consider and behold in these flowers the image of themselves. They also are placed in a fertile soil, and have a thousand charms for which they are loved and sought. Observe how soon the violet, the auricula, and the hyacinth fade, when the cruel north-wind blows upon them. Think of the fate that threatens youth. Young man, be not vain of thy form. Do not venture to join too soon in the sports of thy companions, perhaps more robust than thou art. Be not vain of the flower of thy youth. Life is like unto grass. It flourishes as the flower of the field. "As soon as

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the wind goeth over it, it is gone, and the place thereof shall know it no more."

APRIL XXVII.

The Return of the Birds.

A SMALL number of birds pass the winter with us. Whole families have gone out of our countries. Some sought milder climates than ours; others found warm retreats in caves, in hollow ground, and other such places. By degrees those birds return to us. The mild air in spring awakens the swallow from its benumbed state; and a secret instinct brings back into their own country the birds who last autumn undertook a long passage beyond the seas, in search of subsistence, and of the climate their constitution required. Their return is usually in this order, that those who went earliest return soonest. The air will be peopled again with winged songsters. The groves will resound with the harmonious notes of the nightingale. The swallow will return to the nest it had built the winter before. The stork will find again the very house it left at the beginning of the winter. In a few weeks, the air will resound again with the songs of birds, and their return will fill the plains and the valleys with joy and gladness.

Two things, particularly, are remarkable in this emigration of birds. The first, that they know exactly the time when they ought to return. "The stork in the heavens knoweth her appointed time; and the turtle, and the crane, and the swallow, observe the time of their coming." Undoubtedly the temperature of the air, in respect to heat and cold, and the natural inclination of those creatures to produce, and to bring up their young, are their greatest motives for changing

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their place: but it is, in other respects, a very extraordinary instinct, and in some degree inexplicable. It is no less wonderful that some animals, void of reason, know so exactly the way they are to go, and how far it is. Without compass or guide, without provision, and in the most regular order, they undertake and finish a journey of sometimes more than 200 miles. Who then has taught them to follow a certain road in an element so inconstant as the air? Who informs them how far they are gone, and how far they have yet to go? Who is it that guides, feeds, and furnishes them with all necessaries for their journey? Do not those animals do what men themselves would be unable to do? To undertake journeys of such a length, what experience, what assistance, what directions and preparations do we require? Can we even, with the assistance of our reason, with a compass and geographical maps, follow so invariably the road over seas and mountains, as the birds do, without assistance? In whatever light we consider this, we may plainly discover a power superior to the mere instinct of animals. We must acknowledge, that an Almighty Power has impressed this instinct on the mind of the birds, which they blindly follow.

APRIL XXVIII.

Use of Forests.

DURING the winter, which has just passed, we have very much felt the great advantage forests are to us. They have furnished us with a provision of wood, without which we could not have guarded ourselves against cold. But, it would be a mistake to suppose that this is their only, or even their chief use. For, if God had proposed no other end in creating them, why

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should those immense forests exist, which form an uninterrupted chain through whole provinces and kingdoms, and of which the smallest part is used for firing? It is, therefore, evident that the Creator, in forming those vast forests, proposed to himself to make them of use to mankind in other ways. May not the pleasure we have in the sight of trees be one of the purposes for which they were formed? They are one of the greatest beauties of nature, and it is always a fault in a country to have no woods or groves. Our impatience, when the leaves in spring are long in coming out, and the pleasure we feel when at last they appear, make us sensible how much they adorn and embellish nature. In reflecting on the use of woods, we ought not to forget the fruit which the numerous species of trees afford us. It is true, there are some trees whose fruit appears to be of no use, at least, not of immediate use to man. But, supposing even there were several sorts of fruit not absolutely of use to us, the trees which bear them would be still useful, if it were only for their beauty, their shade, and their timber: besides, if we consider well, we shall find that those trees we call barren, are notwithstanding very useful. Does not their fruit feed an infinite number of insects, which serve for food for birds, designed to be exquisite dainties for us? The acorns of all the different sorts of oak, the chesnuts, and many other berries, are the favourite food of pigs, and wild boars: and have we not experienced in our days, that fruit, when properly prepared, may even serve as sustenance for man! They serve, besides, to preserve seeds from the forests. How many sorts of animals are there to which nature has allotted the wood for their food and habitations, and which would perish, if there were no forests! How many conveniencies, utensils, furniture, and medicines, we should be deprived of, without the wood, the

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bark, and the roots of trees! Lastly, how insipid and dull would the face of the earth be, if it was not for that charming variety of fields and woods, of plains and forests! It is precisely because forests are of so much use to mankind that nature has taken upon itself the care of continuing them. If their generation and propagation had been left to the industry and watchfulness of man, the woods must have been at an end long ago. But the Creator reserved the forest trees to himself. He alone planted them. He alone keeps them up. It is he who disperses their little seeds over a whole extensive country. It is he who has given wings to most of those seeds, in order to be more easily carried by the wind, and spread over every place. He alone causes those vast bodies to shoot out, and rise so majestically in the air, that their tops seem to reach the very clouds. He alone plants them so firm, and preserves them for ages against every effort of the winds. He alone draws from his treasure sufficient rain and dew, to give them, every year, fresh verdure, to keep up a sort of immortality among them.

Merciful Father, thy goodness extends over the whole earth! Is there any country, any place, so remote, so wild, where traces of thy wise and beneficent government may not be seen? Every where, in fields, as well as forests, in barren deserts, as in flowery plains, thou hast erected monuments of thy goodness, for thou art a God of love and mercy.

APRIL XXIX.

Pleasures which the Contemplation of Nature affords.

NATURE offers to all her children, with maternal goodness, the first, the most innocent, the

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least expensive, and most universal of all pleasures. It is that which our first parents enjoyed in paradise; and it is only the fallen state of man which makes him seek other pleasures. Men are apt to despise the daily blessings they enjoy, however excellent; and they only think of multiplying and varying their amusements. It is certain, however, that the pleasure I speak of is preferable to all others. It is almost impossible not to find charms in the contemplation of nature. And that it may be enjoyed without expence is manifest; the poor, as well as the rich, may indulge it. But that is what lessens the value of it. We are so foolish as not to prize what others share with us; while, if we were reasonable, nothing should give more value to a blessing, than the thought that it makes the happiness of our fellow-creatures as well as our own. In comparison of this pleasure, so noble and sensible, how trifling and vain are those far-fetched magnificent amusements, which the rich obtain with so much trouble and expence, which leave a certain void in the soul, always ending in *ennui* and disgust. Whereas, nature, rich and beneficent, presents us continually with new objects. Pleasures, which are only the work of our own imagination, are of short duration, and vanish like a dream, the charms and illusions of which are lost at the moment of waking. But the pleasures of reason, and of the heart, those we enjoy in contemplating the works of God, are solid and lasting, because they open to us an inexhaustible source of new delights. The starry sky, the earth enamelled with flowers, the melodious songs of the birds, the various landscapes, and prospects, every one more delightful than another, may continually furnish us with new subjects of satisfaction and joy. If we are insensible to these, it is certainly our own fault; it is because we behold the works of nature with an inattentive and

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indifferent eye. The duty of a Christian consists in enjoying innocently all that surrounds him. He knows how to draw resources from every thing, and has the art of being happy under any circumstances, at little expence, and without danger to his virtue.

O beneficent Creator, thou rememberest us in this lovely season, and providest abundance of the most real pleasures. A thousand sources of delight are open to us. Joy and gladness surround us on all sides; if we wish to raise ourselves to Thee, to give way to holy meditations, to feel heavenly impressions, all nature furnishes the opportunity. May we ever prefer this noble enjoyment to all sensual pleasures! In the days of spring, may the sight of the beauties of nature affect us more than those seducing pleasures, which only flatter the senses without interesting the mind! Lord, teach us thyself, to know and to feel thy power and goodness. For, it is only in studying to find Thee in all thy works, that we can open to ourselves an inexhaustible and pure source of delight. We shall then have a foretaste of that fulness of joy, which we shall experience in thy presence for evermore.

APRIL XXX.

Animals are Causes for Man to glorify God.

IT is not sufficient not to treat creatures improperly; we ought also to endeavour to make the best use possible of them. How then can that be, but by making them serve to glorify God! This all creatures do, but particularly the animated beings. In every plant, tree, flower, or stone, the greatness and glory of the Creator are visibly imprinted, and one need only open his eyes to see it; but it appears with still more lustre in the

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animal creation. Examine the construction of one only of those animated beings. What art, what beauty, what admirable wisdom, shall we find in it! and how will these wonders multiply, if we think of the almost infinite number and astonishing variety of animals! From the elephant to the smallest worm (which is only visible through a microscope), how many degrees! How many lines, which form one immense chain! What connection, what order, what relation between all those creatures! All is harmony! And if, at first sight, we think we discover any imperfection in certain things, we soon find it is only our ignorance which has led us to form a wrong judgment. It is not necessary that every individual should make deep researches on this subject. It is not necessary to be a learned naturalist. It is enough to attend to the most familiar and the best known things before our eyes. We see, for example, a multitude of animals, all admirably formed; who all live, and feel, and move, as we do; who are, like us, liable to hunger, thirst, and cold, and consequently require, as we do, that their wants may be supplied. To all those creatures God has given life; he preserves, he gives them what is necessary, and takes care of them, as a father of a family does of those that compose his household. Shall we not from thence conclude, that God has the goodness, the tenderness of a father? Shall we not also conclude, that we ought to love God, who is mercy itself? If the care of the Creator extends to animals, what will he not do for us? If he makes it his study to render the lives of those creatures happy and easy, what may we not expect from his beneficence! Let the cautious fearful man then blush at his anxieties; he who, as soon as he finds himself not in affluence, falls into apprehensions, and fears that God will let him perish for want. That beneficent Being, who supplies the wants of so

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many animals, will he not furnish us with all that we require? Let us indulge another reflection upon the instincts of beasts, and take occasion from it to admire and adore that great Being, who so wisely combines the means with the end. As the instincts of animals all tend to their preservation, this appears most evidently in the love and care the beasts have of their young. Our Lord himself, to express the most parental cares, makes use of the image of a hen gathering her chickens under her wings. It is indeed a most affecting sight to behold the natural and strong affection the hen has for her young ones, and the constant care she takes of them. She never takes her eyes off them. She runs to their assistance at the approach of the least danger. She flies at the aggressor with courage. She hazards her own life to save that of her chickens. She calls them and encourages them by her maternal voice. She spreads out her wings to receive and conceal them. She neglects all sorts of convenience to herself; and, in the most uneasy posture, she still thinks of nothing but the safety and welfare of the objects of her affection. Who does not here acknowledge the hand of God! Without the maternal care of the hen; without that instinct so strong, and so superior to every thing, the chickens, the whole species, would infallibly perish. Can it be said that what the hen does for her young is done with understanding and reflection, that she judges, reasons, foresees, combines, and draws consequences? Certainly not. And though, at first sight, every thing really seems to proceed from the tenderness and understanding of the bird; yet we must acknowledge in it a superior hand, which shews itself, without our knowing in what manner it acts. I think these two examples are sufficient for the purpose: Therefore, without enlarging more upon it, I shall content myself with concluding in a few words, That it is the

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duty of man to seek in the animals an occasion to glorify God; that it is an indispensible duty, which ought to be sacred to him, and is equally agreeable and useful.

MAY 1.

The System of the World.

THE sun, of all parts of the system of th world, is that which interests us the most. Its form is spherical, and it is composed of a fiery substance which never consumes. There are spots in certain parts of it (as may be seen through telescopes), which shew that it moves round its own axis. This body is one hundred millions of miles distant from us. It is a million of times larger than our earth, the circumference of which is more than 24,000 miles; it communicates its light to nineteen opaque globes, which take their course round it at different distances, and are called planets. The nearest to it is Mercury, which is in a manner buried in the rays of the sun! and this being so close to it, is the reason that, of all the planets, we know the least of it. A little farther is Venus, which is called the Morning Star, poetically Lucifer, when she rises before the Sun, and the Evening Star, poetically Hesperus, when she sets after the sun. Next to Venus comes our globe, the surface of which is composed of land and water, mountains and valleys; and the interior part consists of beds and strata of different substances. This earth is the abode of a multitude of creatures, both animate and inanimate, metals, plants, and animals. The moon turns in a particular orbit round us, and accompanies our globe in the whole circle it describes round the sun. It is fifty times smaller than the earth; and there are visibly distinguished in it some parts that are light and shining, and

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others that are dark and dull: the first supposed to be continents, and the other seas. For, if the moon was composed only of one substance; if it was a body entirely solid, or entirely fluid, it would reflect the rays of the sun all the same way, and we should not see those spots in it. A fluid body, such as water, absorbs a great quantity of rays and only reflects a part of them: it is therefore very apparent that the dark parts of the moon are seas, and that the bright parts are land. Among the light parts, some are more brilliant than others, and even cast a shade. They must then be higher than others, and resemble our mountains. Some of these mountains are alone, others are contiguous, and sometimes form very long chains. In the seas of the moon, some parts are observed to be less dark, and appear, consequently, to be like our islands. The four last planets of our solar system are, Mars, Jupiter, with his four moons, or satellites; Saturn, with five; and the Georgium Sidus, with two already discovered, and probably more. There are spots also visible to us in them. Georgium Sidus is so far from the sun, that he requires no less than 82 years to finish his revolution. This vast domain of the sun, which, without reckoning comets, extends to more than 400 millions of miles, is however but a part of the universe. But each of the fixed stars, the number of which is perhaps more than the grains of sand on the sea shore, may be considered as a sun, which equals ours, or perhaps surpasses it.

Such is the wonderful greatness of the works of God, and thus the heavens declare the glory of the Lord! With what splendour does the majesty of the Creator shine in those wonderful works, which invite us so strongly to pay a tribute of admiration and praise to the great Being who made them! Is there any thing in nature more proper to inspire us with sublime ideas of the Deity than the sight of the celestial sky! Can we

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ever raise our eyes to heaven, without having the most lively sense of the magnificence and greatness of Him who gave being to all things, and who governs them with incomprehensible power, wisdom, and goodness! What are poor miserable mortals, lost in the immensity of the creation, who crawl like insects on a grain of sand! What are we, in comparison of those innumerable solar systems, which contain so many vast globes within their circle! What are we, especially in comparison of the Creator of all these worlds, these suns, and these skies, which, if we attempt to measure, trouble and confound the understanding! And yet this sovereign Ruler of the immense universe deigns to honour us with his protection and paternal care. How adorable are all his mercies!

MAY II.

Reflections on the Blossoms of Trees.

AT this instant, in which our gardens and fields are adorned with all the ornaments of spring, all Europe appears with equal pomp, and every where presents the most cheerful prospect. The power of the first word pronounced by the Creator, when he formed the world, produced all these magnificent effects. One hand alone, the hand of the Creator and Monarch of the world, has in a few days renewed, and in a manner created the earth again, for the use and pleasure of his intelligent creatures! Come, O man! come and try what thy wisdom and power can do. Art thou able to make a single tree blossom, to call from the earth the smallest blade of grass, to order a single tulip to appear in all its beauty? Draw near, learned artists, skilful painters, and contemplate these flowers, examine these master-pieces with the most scrupulous attention; is any thing wanting to their

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perfection? Do you find any fault in the mixing of the colours, in their form or proportion? Could your pencil express the dazzling red of the peach blossom? Could you imitate the fine enamel, the uniformity and simplicity with which a cherry-tree in blossom is adorned? But why do I say, imitate? Are you even capable of feeling all the magnificence of renewed nature, or of forming to yourself a just idea of its inimitable art? If there were no stronger proofs on earth of the power and wisdom of God, the flowers of spring alone would be sufficient to convince us of it. Each tree that blossoms, each herb and flower, proclaims his goodness and wisdom, which is over all the earth. We remark an infinite variety in the blossoms of trees. All are beautiful; but their beauties are different. One surpasses another; but there are none which has not something pleasing peculiar to itself. However great the Creator in the dispensing his gifts, he still reserves to himself the liberty of bestowing more on some than on others. But this difference is only in respect to accessory qualities. Such a tree, for example, has blossoms of a dazzling white! another has red stripes and shades, which the first wants: some have, added to the beauty of their form and colour, an exquisite perfume. But all these differences are only accidental, and do not in the least affect their fertility. Thus, when God does not give us the same advantages as appear in some of our fellow-creatures, it ought not to afflict or disturb us: for the loss of any accidental beauty, of whatever nature it may be, does not hurt our real welfare in the least. If we are not as rich, as highly considered, or of as fine a form as others, we may, notwithstanding, be quite as happy, as virtuous, and as agreeable, both to God and man. Provided we bear the fruits of pi-ty and virtue, we possess real beauty. For why do the blossoms of trees please us more than the rich colours of a tulip, or auri-

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cula, or a ranunculus? It is because the pleasure the latter gives us is of short duration, whereas the other gives us hope of delicious fruit. Let us not, therefore, confine our wishes to the beauty and exterior charms of a fine flower. The beauty, the graces, the bloom of health, and other outward advantages of nature, are not the things which afford us durable and permanent pleasures. The blossoms which promise fruit agreeable to God, these are what truly merit our esteem. They will never fade. All those dazzling beauties we admire in the blossoms on the trees, will disappear in a few days; and such will be the fate of all the blooming young people now so vain of their charms. Let this thought ever attend us in the solitary walks we take in our gardens: and let our chief study be, to act in such a manner, that, when the beauty and charms of the body are no more, we may supply their places with abundant fruits of virtue and piety.

MAY III.

Continual Revolutions and Changes in the Earth.

MOTION and change seem absolutely necessary for the preservation of the corporeal world. In the whole universe there is not the smallest particle in a constant and entire state of rest.—Nothing is more easy than to be convinced of this, by attending to what passes on the globe we inhabit. The earth turns, every 24 hours, round its own axis; and by this motion, all the points of its surface (except the poles) change place with more or less rapidity. Under the line, where this motion is the swiftest, every thing moves more than two leagues in a minute, though it does not change its situation on the surface. But, besides this, the earth makes its annual revolution round the sun with so much velocity, that, according

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to the most moderate calculations, it goes 146 leagues in a minute, though its course is not perceptible. The motion of earthly bodies is more observable. Little rivulets unite, and form greater. These, in their turn, form torrents and rivers, which are afterwards lost in the sea. This is not all: plants and animals every where require water to nourish them. The water rises in vapours, which form into clouds, and fall again in rain, snow, and fogs, and whatever is not transformed in its fall goes again into the sea, where the flux and reflux, storms, torrents, &c. keep the water in a continual motion. Neither is there any repose in our atmosphere. Between the tropics an east wind continually blows; and though, in other places, the motion is not always perceptible, yet the barometers and thermometers prove that the air is never perfectly still. Meteors also, of every sort, shew that nature is in constant action. The coat or surface of the earth is also subject to frequent revolutions. The hardest rocks split; stones gradually wear and break; lands fall in, others are overflowed; certain grounds rise, and others are overturned by earthquakes; little hills are washed away by waters, valleys are filled up; marshes grow dry, and are covered with trees; the bottom of the sea becomes firm ground, &c. Light and darkness, cold and heat, drought and wet, succeed each other by turns. Lastly, the continual variation of heat occasions, every hour, changes which are often imperceptible. If we add to this the changes visible in animals, we may have some idea of the continual revolutions to which every thing here is subject. It is said, that man daily loses about two ounces and a half in perspiration. It is replaced by other particles; so that, at the end of ten years, a man's body is entirely changed. All animals and plants feed, grow, propagate, die, and corrupt.

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Thus, every thing on earth is in motion; every thing grows and decays by turns. In a word, to be born, and to die, is what continually passes on the theatre of the world. But this does not happen accidentally or without order or design. Every thing acts according to certain laws, which tend to certain ends. Every thing combines, every thing concurs, in the most perfect manner, to the glory of the Creator. All contribute to, all end in the happiness of the universe. These continual revolutions are useful warnings to us. They teach us that this world cannot be our place of destination. When we consider the continual vicissitudes which all here below must undergo, is it not the most affecting lesson for us, on the vanity of all earthly things, on the uncertainty and shortness of life, on the necessity of a better state, an everlasting life in the world to come? Yes, every thing points out to us our destination, and declares we are but sojourners and travellers on the earth.

With what consolation my soul is penetrated when, in the midst of the revolutions of the world, I lift up my eyes towards Thee, O Lord! towards Thee, who art both immutable and eternal! Let the mountains be shaken, and fall down; let the sea be troubled, and the waves roar; let all that is earthly be destroyed, and return to dust; still Thou art, and ever must be invariably the same.

MAY IV.

An Invitation to seek God in the Works of Nature.

AWAKE, O my soul, awake from the slumber in which thou hast been so long plunged, and be attentive to all around thee. Consider thyself, and all other creatures. Reflect on their origin,

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their construction, their form, their use, and a thousand other circumstances, which must fill every attentive observer of the works of God with admiration. When thou seest the sky, with its variety of lively colours, the stars which shine so bright, the light which discovers to thee the objects around; ask thyself, from whence proceeds all this? Who formed that immense expanse of the heavens? Who placed in the sky those innumerable fires, those stars, which, though at so prodigious a distance, dart their rays even unto us? Who ordered the stars to move with so much regularity, and the sun to give light and heat to the earth? Is it not Thee, adorable Creator? Yes, it is thy mighty word, that called forth all things, and ordained them to exist and live. What must be thy greatness, thy incomprehensible greatness, O Lord God! to enable Thee to make all these out of nothing! How infinite thy goodness to have so planned every thing, that all contribute to our happiness! Stupendous mountains! What mighty hand fixed your foundations? Who raised your heads to the very clouds? Who adorned you with forests, with fruit trees, with plants, and flowers? Who covered your tops with snow and ice? Who caused to flow out of your bowels those springs and rivers, which water and enrich the ground? It is thy hand, O Almighty Creator! which has done all these wonders: and I adore that divine hand, with sentiments of admiration, respect, and gratitude. Flowers of the field! who gave you your magnificent clothing? How happens it that you were produced out of a little earth and a few drops of water? From whence have you that variety of perfumes, which embalm the air, and delight us; those lively colours which charm our sight, and which no human art can imitate? This is thy work, O Lord! Every thing on earth proceeds from Thee. And you, O ye ani-

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mated beings, who people the air, the waters, and the land, to whom do you owe your existence, your construction, and those instincts, so various and so wonderful, which astonish our reason, and are so well adapted to our nature and way of life? What a multitude of wonders may I not observe in myself? How does a handful of dust become a body well organized? How is it that one of its parts has sight; that another, by means of the undulation of air, is informed of the thoughts of other people? How is it that I have the faculty of communicating ideas and desires? How does a little matter, bruised by my teeth, afford me so many agreeable sensations? I acknowledge the hand of my Creator in all these incomprehensible wonders. His wisdom, power, and goodness, all combine to render us happy.

MAY V.

The Dawn of Day.

THE morning dawn discovers to the world a new and magnificent creation. The shades of night deprive us of the sight and enjoyment of the earth and sky. But when the light of day returns, we behold all nature renewed and embellished. On a sudden, we see the earth arrayed in all its magnificence; the mountains crowned with forests; the hillocks clothed with vines; the fields covered with their harvests; and the meadows watered with rivulets. The horizon glows; the clouds are all tinged with variety of the liveliest colours; cheerful flowery vales are discovered at a distance; light vapours arise and change to gold; and the dew drops that fall on the flowers, take the mild lustre of pearls. By degrees, as the light increases, the spectacle becomes more magnificent. We go from light to

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light, till at last nature presents us with her most glorious object. The sun rises; and the first ray that escapes over the mountain which had concealed it from us, darts rapidly from one end of the horizon to the other. More rays follow, and strengthen the first. By degrees the disk of the sun comes out, and shews itself entire; then advances and runs its course, with a majesty which the human eye can no longer support. Were any one suddenly to see this delightful scene, for the first time, from the top of a hill, what would he think? what would he do? Doubtless, he would prostrate himself, full of sweet emotion and pious respect, to adore that God who is the Author of the sun. Eternal Being! (would he cry) in the beauties of the rising day I acknowledge thy power and wisdom. With the lark, who, towering in the air, salutes the morn, and proclaims its arrival by the sweetness of its notes, I soar towards Thee, O Lord! who art the Father of the whole creation. The joy and gladness of all nature, the animation of every being, invites me also to raise my soul towards Thee with the most lively transports of gratitude and joy. At this moment, while the sun is darting his first rays upon the earth, millions of creatures praise and adore Thee. Can I then be still insensible to all these wonders! From Thee proceeds each beauty of the morning dawn; from Thee, who art the source of light. It is Thou who hast given it those lively colours, and impressed a sense of them on our souls. Thou hast given us souls of a heavenly nature, capable of tracing Thee in all thy works. Our eyes seem to behold Thee in the splendour of the rising sun. If Thou didst not exist, there would be neither sun, nor dawn, nor creation.

But are not those indolent men much to be pitied, who never gave themselves the heavenly pleasure of contemplating the rising sun? O if

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they were but rational enough to indulge in the pure and delightful enjoyment which this magnificent object of nature is so calculated to inspire! If they could but feel, that the sight of beautiful nature must naturally fill the heart with pious delight, and profound veneration for the Creator! If they could, in fine, comprehend, that one single thought, which rises in the soul, on seeing the dawn of day, may become the happy beginning of a Christian life, would it not be worth giving up some hours of sleep for it.

MAY VI.

Wonders of Vision.

NO objects can become visible to us, unless rays of light proceed from them, and fall upon our eyes. Those rays which enter into our eye, pass through the cornea, through the watery humour, through the pupil, and penetrate at last even into the chrystalline. After having been sufficiently refracted and collected together in this place, they paint on the retina (behind the vitreous humour) the image of the outward objects, and they draw it with a perfect exactness and clearness. The rays then touch the optic nerve, which is as sensible as the finest string of a harpsichord. This nerve, by its motions and vibrations, produces different sensations in the soul, and excites perceptions and ideas in it, conformable to the impressions which the outward objects make upon the brain. What has just been said of the sight, shews that it well deserves some reflection upon it. The image of all our outward objects is painted on the retina upside down, and yet we see them right, and in their real situation. How is it, that the largest objects are painted in our eyes extremely small, and yet we see every thing

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according to its real size? How is it, that when we see from a high tower some thousands of houses below us in a great city, that each of them is painted so exactly in our eyes, on a space which is scarce three times as large as the head of a pin? So many millions of rays come through a very little opening, and collect together on the retina which lines the inside of the eye, without confounding with one another, and still preserving the same order which the points of the object from whence they proceeded had amongst themselves. But this is not all. Look from the top of a high mast at a fleet in full sail; contemplate the sea itself, how many millions of waves will you see? Each of them, however, reflects a mass of rays upon our eyes, small as they are. Afterwards, on a calm day, go on a high mountain and look over a country of five or six leagues extent. Each tree, each herb, or even blade of grass, sends rays to us, otherwise it would be impossible we should see a continual verdure on the fields beneath us. Is it not also very astonishing that we do not see double; and, though we have two eyes, that each object appears single? Another cause of admiration is, that those objects which we see are not alone visible to us. We are surprised at the number of rays they send to so small a space as the pupil of an eye, yet they convey as much to spaces of that size every where. It is for that purpose, that wherever we go, new rays supply the place of the preceding, and render visible to us the same objects we perceived before we changed place. But all the rays that are admitted into the eye do not take effect. Along with these there are numberless others, which, being much weaker, are effaced by the light of the first, but are always ready to do the same offices when required. If we prick a sheet of paper with a pin, and look through the hole (so much less than our eye), we still, however, see the objects,

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though they appear much smaller to us. But who reflects upon all this? The habit of seeing, as soon as we open our eyes, makes us consider this operation as a thing extremely simple and easy to comprehend. We are, however, far from being able to explain the manner in which we see objects. Indeed, we know how the image forms itself in the bottom of the eye: We also know what all the parts which compose it, contribute to it. But that is not sufficient: For the eye can have no idea of what passes in it. It is therefore necessary that the impression which the rays make upon it should reach to the brain; and that, in order to do so, the rays should paint the image on a coat woven with nerves, which correspond with those of the brain. Thus the motion impressed by the rays on the nerves of the retina, is transmitted by the optic nerve to the brain. But we cannot describe what passes there; because we do not know, either the nature of the brain, or the use of its several parts. These wonders, which are beyond our conception, are evidently the work of a Divine Power, united with infinite goodness, as they are all so many blessings bestowed upon us.

MAY VII.

Spring renews the Face of the Earth.

WHAT a change is there throughout all nature, and how great is the goodness of that Supreme Being, who causes the seasons to succeed each other so regularly! Our earth, which rested during winter, resumes its ornaments, and its fertility. The whole creation is animated, revived, and full of joy and gladness. A very few months ago, the whole surface of the earth was barren and desert. The valleys, the prospect

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of which gives us now such pleasure, were buried in a deep snow. The mountains, whose grey tops rise to the very clouds, were covered with snow and ice, enveloped in impenetrable fogs. In those verdant walks, which the nightingale now inhabits, nothing was seen but dry leafless branches. The rivers and streams, which murmur as they flow, were stopped in their course by the ice, which froze them. The birds, which now fill the air with their songs, were insensible, in caves and marshes, or gone to other countries. There reigned a mournful silence every where; and, as far as our sight could reach, we saw only a dismal solitude. But scarce has the almighty breath been felt, when nature awakes from its inanimate state, and spreads pleasure and a thousand charms around us. The sun approaches our globe; and, at once, the atmosphere is penetrated with a quickening warmth; the whole vegetable kingdom proves its beneficent effect; and the earth produces grass and flowers of every sort. Now the face of the earth is renewed and embellished. At the sight of this happy revolution can we fail of looking up to the great Being, who is the cause of all!

"Lord, Thou visitest the earth, and makest the valleys to smile. Thou sprinklest them with dew to enrich them, and the springs with which Thou waterest them, are always plentiful. At thy command, our harvests are ripe, and fill our hearts with joy. Thy blessing is upon our furrows, and the rain refreshes the dry earth. Thou makest it soft, and blessest the seed. Thou crownest the year with thy blessings. Thy word maketh the ground fruitful. Under thy steps the flowers and fruits spring up. Blessing and fruitfulness are thine. The pastures of the desert are watered, and the little hills are adorned with a beautiful verdure. The countries are covered with flocks, and the valleys are full of corn.

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Every place resounds with songs of joy and gladness. The praises and thanksgivings of all nature rise to heaven itself."

In this revolution, which the spring brings with it, I behold an emblem of the salutary change which a soul experiences, who has not resisted the operations of the divine grace. It had, before, no real beauty; its faculties were depraved and inordinate: it was unable to produce pious fruits. But, how happy its state, since it has felt the divine influence of grace. It is now like the earth in spring, which feels the power of the sun. Ignorance vanishes; folly and vice disappear; the passions are subdued; the heart is full of virtuous and religious sentiments, the fruits of which delight and edify mankind.

MAY VIII.

The springing up of Seeds.

THERE are at present many changes making before our eyes in the vegetable kingdom, but there are still many more which escape our sight, and which nature does in secret. The seed, some time ago sowed in the ground, swells, increases, and the plant by degrees shoots up and grows. This mechanism deserves so much the more attention, as it is, properly speaking, the source of all the beauties which spring and summer present us with in the vegetable kingdom. The seed is composed of different parts, according to the different species; but the chief is the germ. Each shoot has two parts; the one simple, which becomes the root; the other scaly, which rises and becomes the stalk and the head of the plant. The seed of most plants is composed of two pieces, which are called lobes, that are filled with a mealy substance, which serves for seminal leaves

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to the plant. Mosses have the most simple seed of any. It consists only in the shoot, without pellicles or lobes. A certain degree of moisture and warmth are absolutely necessary to make the seeds spring up. The increase of heat, and the difference observable in the taste and smell, seem to discover here a sort of fermentation. By means of this preparation, the meally substance of the lobes becomes proper to nourish the tender shoot. It is known by experiments, which have been tried with coloured juices, that this substance sucks in a moisture, which furnishes a proper nourishment, with the assistance of air, and of heat, till the plant has acquired consistence enough to profit by the juices which the root procures for it. Then the exhausted lobes dry by degrees, and, at the end of a few weeks, fall off, when the plant no longer requires them. Certain herbs, which grow on mountains, are of a very particular nature. As their duration is short, it would often happen that the seed would not have time to ripen. In order, therefore, that the species should not perish, the bud, which contains the shoot, is formed at the top of the plants, puts out leaves, falls, and takes root. But, when the plant comes out of the earth, it would run too great a risk, if it was at once exposed to the outward air and the power of the sun. Its parts, therefore, remain folded, and laid one upon another, nearly as it was in the seed. But, by degrees, as the root strengthens, and stretches on all sides, it furnishes the upper vessels with abundance of juice, by means of which all the organs soon unfold themselves. The plant is, at first, almost gelatinous, but it gradually acquires more consistence, and is always increasing.

This abridgment of the history of the shooting of plants, is sufficient to shew us how many preparations and means nature makes use of, to produce one single little plant. When, therefore,

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we see a seed spring up, which we have sowed, we must not imagine (as is usually the case) that it is not worth our attention. It is one of those wonders of nature, which is a subject of reflection for the greatest men. At the sight of this phenomenon, let us silently admire the power and wisdom of that God, who is adorable in all things. The order with which the plants so regularly succeed each other, is a proof of that wisdom which manifests itself even in the smallest things. This reminds us of our moral nature: that also contains a certain seed, which shoots with years, which grows and bears fruit. In the designs of the Creator, this was a means to lead us to happiness; but our natural corruption, and outward circumstances, often defeat those merciful intentions.

MAY IX.

The Chick in the Egg.

WE are much obliged to the naturalists, for taking the trouble to make inquiries into the generation and propagation of animals. Nothing contributes more to the glory of the Creator than the observations made on the wisdom which appears in the production of animated beings. The less we are able to give an account of all his works, the more earnest we should be to take every opportunity of knowing some of them at least. With this view, let us now consider the formation of the chick in the egg; such as has been discovered by one of the greatest naturalists. The hen has scarce sat on the egg twelve hours, when they begin already to discover in it some lineaments of the head and body of the chicken which is to be born. The heart appears to beat at the end of the day: it has at that time the

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form of a horse-shoe, but no blood is yet seen. At the end of forty-eight hours two vesicles of blood can be distinguished, the pulsation of which is very visible. One is the left ventricle, the other the root of the great artery. At the fiftieth hour one auricle of the heart appears, and resembles a lace or noose folded down upon itself. The beating of the heart is first observed in the auricle, and afterwards in the ventricle. At the end of seventy hours they distinguish wings, and on the head two bubbles for the brain; one for the bill, and two others for the fore part and hind part of the head. Towards the end of the fourth day, the two auricles, already visible, draw nearer to the heart than they did before. The auricle which appears first, seems to have two horns, but it is afterwards found to be two auricles. The liver appears towards the fifth day. At the end of 131 hours, the first voluntary motion is observed. At the end of 138 hours, the lungs and stomach become visible, and at the end of 142, the intestines, the loins, and the upper jaw. At the 144th hour, two ventricles are seen, and two drops of blood, instead of the single drop which was seen before. The seventh day, the brain, which was slimy, begins to have some consistence. At the 190th hour of incubation, the bill opens, and the flesh appears in the breast. At the 194th, the sternum is seen, that is to say, the breast-bone. At the 210th, the ribs come out of the back, the bill is very visible, as well as the gall-bladder. The bill becomes green at the end of 236 hours; and if the chick is taken out of its coverings, it evidently moves itself. The feathers begin to shoot out towards the 240th hour, and the skull becomes gristly. At the 264th, the eyes appear. At the 288th, the ribs are perfect. At the 331st, the spleen draws near the stomach, and the lungs to the chest. At the end of 355 hours, the bill frequently opens and shuts; and at the end of

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431 hours, or the 18th day, the first cry of the chick is already heard. It afterwards gets more strength, and grows continually, till at last it sets itself at liberty, by opening the prison in which it was shut up. Adorable wisdom of God! it is by so many different degrees that these creatures are brought into life. All these progressions are made by rule; and there is not one of them without sufficient reason. If, for example, the liver is always formed towards the end of the fifth day, it is founded on the preceding situation of the chick, and on the changes that were to follow. No part of its body could appear sooner or later without the whole embryo suffering, and each of its limbs becomes visible at the most proper moment. This ordination, so wise, and so invariable, in the production of this animal, is manifestly the work of a Supreme Being: but we shall still more sensibly acknowledge the creative powers of the Lord, if we consider altogether the manner in which the chick is formed out of the parts which compose the egg. How wonderful is it, that there should be in this egg the principle of life of an animated being; that all the parts of an animal's body should be concealed in it, and required nothing but heat to unfold and quicken them! That the whole formation of the chick should be so constantly and regularly the same way! That, exactly at the same time, the same changes take place in twenty eggs, or more, that a hen hatches! That when the position of an egg is changed, and turned from one side to the other, it does not in the least hurt the fœtus, or prevent its formation! That the chick, when it is hatched, is heavier than the egg was before! Even these are not all the wonders in the formation of the chick. The microscope, and the observing spirit of man, have only discovered what falls the most under our senses. How many things, the complete discovery of which is reserved for them who come

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after us, of which we shall not have a perfect knowledge till in a future state! How many inquiries may be made on this mystery of generation, inquiries which the human mind can never here resolve. But let not this ignorance discourage us; let us only think of making a good use of the knowledge we have, by leading us to admire and praise the wisdom, the power, and the goodness, of our Creator.

MAY X.

On the Buds of Flowers.

ON all sides I discover a multitude of flowers in the bud. They are at present enveloped and closely shut up in their intrenchments. All their beauties are hidden, and their charms are veiled. Such is the wretched miser who lives by himself, who centres all in himself, and whose views are mean and selfish; who connects every thing within himself; who makes his own private advantage or pleasure the only object of his desires, and the narrow motive of his actions. But soon the penetrating rays of the sun will open the buds of the flowers, and will deliver them from their silken bonds, that they may blow magnificently in our sight. What delightful perfumes will they exhale! Thus, also, may the most sordid miser become beneficent when his soul is enlightened by grace. To a heart of stone may succeed a feeling and compassionate one; a heart susceptible of the sweetest and tenderest emotions. By the mild influence of the Sun of righteousness, the social affections discover themselves, and open more and more. Sensibility no longer centres in one object; it becomes universal; it takes in all mankind; it extends its generous cares, and all that is within its reach is benefited by it. When I reflect on

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the buds and blossoms, I think of you, O lovely youth of both sexes! The beauty and power of your minds are not yet unfolded. Your faculties are still in a great measure concealed. The hope which your parents and masters conceive of you will not so soon be realised. When you consider these buds, say to yourselves, I resemble that bud, my parents and masters expect from me the unfolding of my talents and faculties; they do every thing for me; they neglect nothing for my information and instruction; they watch most tenderly over my education; to the end that I may become (first by blossoms and afterwards by excellent fruit) their joy and comfort, and make myself useful to society. I will therefore do all in my power to fulfil the pleasing hopes they form. I will take advantage of all the improvement and instruction they give me, in order to become every day wiser, better, and more amiable. For this purpose, I will take care not to give way to the desires and passions of youth, which might be fatal to my innocence, and destroy all the hopes conceived of me.

"In the morn of life, I blossom like the bud, which insensibly opens. My heart beats with joy, yields to the most cheerful hopes, and sees nothing but happiness in future. But if I was imprudent enough to give a loose to mad desires, and the false pleasures of luxury, those guilty flames would soon wither and corrupt my young heart."

MAY XI.

Indefatigable Labours of the Bee.

IT is one of the advantages of spring, that it furnishes us with an opportunity of observing the industry and labours of the bee. Certainly a bee-

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hive is one of the finest sights a lover of nature can ever have. We cannot tire contemplating that laboratory, where millions of artificers are employed in different works. We are in a continual state of surprise on seeing their order and regularity; and particularly in those magazines so plentifully furnished with all that is necessary for the subsistence of the society in winter. What merits our attention more than all the rest, is, the indefatigable application and uninterrupted labours of this little republic. The bees give us an example of industry and activity, which is not only uncommon, but perhaps has not its equal. They appear as soon as winter is over, even when it might still be feared that the cold would hurt them, and benumb their delicate limbs. When the juices of the flowers which begin to blow have not yet been sufficiently digested by the sun, so as to furnish honey in plenty, the bees still gather some little for their food. But their cares and activity redouble very evidently during spring and summer. They do all they can; and despise not small profits, provided they can only increase a little their provisions. In the building of their cells, they are so indefatigable, that we are assured that a honey-comb of double cells, back to back, such as three thousand bees can lodge in, is dispatched in twenty-four hours. This whole work is divided amongst the members of the republic. While some of the bees are gathering the wax, preparing it, and filling the magazines, others are employed in different works. Some take the wax, and make use of it to build their cells; others knead it, polish, and purify it; others gather the honey from the flowers, and lay it in the hive for their daily subsistence, and for future occasions. Others close, with a covering of wax, the cells in which they keep their winter provisions of honey. Some carry food to their young, and close with wax the cells of the little ones, that are near the

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time of transformation, to prevent their being disturbed in working their way out. Some closely stop up, with a sort of bird lime, all the chinks and holes in the hive; and cover all the weak places, that neither the wind nor little insects may find entrance. Some drag out of the hive dead bodies which might infect them; or, if these dead bodies are too heavy to be carried away, they cover them over with bird lime or wax, and cement them in such a manner, that, in corrupting under that crust, they cannot occasion any bad smell. But it is not enough to admire the activity of these little creatures: it ought to give us emulation, and serve us as a model, considering the proportion between us. We have many more motives for diligence than those insects. We have an immortal soul of inestimable value. With what application ought we to labour for its happiness, and to avoid what might lead to its total ruin! What is more calculated to excite us to activity and indefatigable diligence, than the considering, that the fruit of our labours does not merely extend to a few days and years, but to eternity itself? The bee gathers honey, not only for herself, but for her superiors; whereas, in applying ourselves to wisdom, we labour for ourselves, and we gather fruits for everlasting life. Let us, therefore, never be slothful or idle in doing good; but let us acquit ourselves of the duties of life with zeal and fidelity.

MAY XII.

How Providence has provided Food for Animals.

FROM the elephant to the mite, there is no earthly animal which can live without food and nourishment; from the eagle to the gnat, no bird can do without it; from the leviathan to the

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smallest worm, no reptile can subsist without eating; from the whale to the oyster, there is no animal in the waters to which food is not necessary. But, in forming these creatures thus, God has at the same time ordained, that there should always be an abundant great variety proper for their sustenance. As many species of animals as there are, so many sorts of food are there for them. There is no beast on earth that does not find the food adapted to its nature. We may, in this respect, divide animals into three chief classes. The first comprehends those that feed on the flesh of others: some, like the lion, love only the quadrupeds; others, birds, as the polecat; others, again, only fish, like the otter; and, lastly, some love only insects, as several of the birds do. There are some exceptions in all these; but, in general, it is certain that each species has its particular food designed for it by the Creator. The second class includes the animals which seek their food amongst vegetables. Some animals prefer grass; others, fruit trees; and, amongst those which love the same plant, there is still a very remarkable difference. Some only feed on the root, others on the leaf; some love the stalk or body of the plant; others the marrow or seed, or the whole fruit; there are some also which eat the whole plant. Those that feed on minerals belong to the third class; they are mostly insects; and it is rather difficult amongst them to ascertain what food such and such sort in particular require; because those little animals cannot be so easily observed as others. It is known, however, that some of them feed on earth, others on stones. And if we consider that there is scarce any beast or plant, which does not serve as food to some animal, we shall easily conceive that it must be the same in respect to the mineral kingdom; and that there is nothing there which does not serve directly or indirectly as food for some

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insect. I here comprehend the words of David: "The eyes of all wait upon thee, O Lord, and thou givest them their meat in due season. Thou openest thine hand, and fillest all things living with plenteousness." The cares of Divine Providence are evident proofs of that eternal goodness which extends over the whole universe. Reflect on the prodigious number of animals which exist. How many millions of species of birds and insects, and how many hundred millions of each sort! How many millions of animals live in all parts of the earth! How many hundred millions of each kind find dwelling and food in the forests, the fields, the mountains, and valleys, in the caves and hollow parts of rocks, upon trees, and in trees, in turf, in stones, &c. What innumerable shoals inhabit the ocean! What immense numbers of fish swim in the sea, and in rivers! All these creatures find their daily food. How inexpressible the multitude! How astonishing the variety of insects which everywhere surround us, millions of millions repeated! Insects in the air, in plants, in animals, in stones; insects in other insects! All of them constantly find their daily food. How infinitely also does the wisdom of the Creator shine forth, in his manner of providing for all these animals! He gives them all the food fit for them, and adapted to their nature; for each kind of food does not indifferently suit all animals: a particular sort is required for quadrupeds; another for birds; others still for fish and insects. This distribution of food is a means wisely ordained by the Creator, to afford sufficient food for each species of animals, and to prevent any of the sustenance, which the earth produces, from being useless. But if God so provides for animals void of reason, what will he not do for man! Such is the conclusion we may and ought to draw, from seeing the plan of Divine Providence, which gives to all the beasts of the earth

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every thing necessary for their support. Oh man of little faith! anxious, restless, discontented man! go and reflect on the goodness with which the Lord sustains the lives of animals; and let that teach you to be content, and trust in God. Behold the birds in the air; the fallow-deer on the rocks, and in caves; the fish in the sea; the animals in the fields and in the forests; every thing finds food and habitation fit for it. Great in the smallest things, as well as in the largest, God does not disdain or neglect the lowest worm. Is it possible, then, that man alone should not be the object of his paternal care?

MAY XIII.

The Senses of Animals.

IN all animals the organs of the senses are disposed in a manner conformable to their nature and design. It is by their means, that they take in knowledge of objects, either near or distant, and that they are enabled to provide necessaries, and to guard against dangers. By the feeling, animals form an idea of corporeal objects, as soon as they touch them. This sense, in beasts, as well as in mankind, has its seat under the outward skin, the extremities of which are covered with a multitude of nerves and sinews. It cannot be exactly ascertained what revolutions the feeling goes through in the greater number of beasts. It is even doubtful if insects are not endowed with another sense, and if their horns may not be organs of an unknown sense which men are entirely deprived of. Birds, fish, serpents, and some other animals, appear not to have it. The organs of taste are principally the tongue and the palate, which receive the impressions of relish; but the *papillæ* are the immediate instruments of it, as like-

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wise of the touch. There is, accordingly, much analogy between these two senses. The smell has for its organ the membrane which lines the nose. It is by means of a collection of small nerves there, that they perceive part of the odorous vapours which swim in the air. Animals, who require a nicer and keener smell, are therefore endowed with a greater perfection of this organ. Worms appear entirely without any, and perhaps also fish and insects; but it is possible that in the latter the horns may be the organs of smell. By means of this sense, beasts find all that is necessary for the preservation of their life; birds and reptiles their food; and many animals are warned by it of the approach of their enemies. The hearing conveys to animals the fluttering and vibrations of the air. The construction of the ear is not the same in all beasts. Some, like the lizard, have two drums. Some are deprived of several parts which most other animals have. It is thought that neither birds nor fish have that part which is called the snail, or shell, and that insects and worms are absolutely deaf. The eyes are the organs of sight. Except the cuttle fish, the hedge-hog, and perhaps a few others, all reptiles are without eyes. Almost all insects, on the contrary, have more than two. Most of them have them in profusion, generally collected into two orbits. The spider and scorpion have eight eyes. In one fly there has been reckoned 16,000 eyes, in a scarab 6362, and even 34,650 in a butterfly. The number and position of those eyes make the insects amends for not being able to move or turn them. The fish have none of the watery humour; but their chrystalline is almost entirely round. All the organs of the senses are evidently disposed, in a manner conformable to the make of animals and their several wants. As the eyes of most insects are immoveable, nature, to supply the defect, has given them horns,

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by means of which they discern dangers, which would escape their sight. The eyes of fish are disposed with equal wisdom. A full projecting eye would not suit them, for which reason their cornea is quite flat; but, to remedy this defect, the Creator has given them a chrystalline perfectly spherical: whereas in animals that live in the air, it is lenticular, and consequently flatter. Although the form of all eyes is round, there is a visible difference in this roundness. The situation even in the head is infinitely varied, according to the different designs and wants of animals. In man, who sees little but what is before him, the eye is placed on the fore part of the head, but so contrived, that he can receive the impression of nearly the whole semicircle of objects before him. In birds, on the contrary, the eye is placed in such a manner, that it admits almost the whole circle of the objects around it: From thence, they are better able to get their food, and to shun the dangers to which they are exposed. The human ear has the form best adapted to the upright posture. In the birds, it is more proper for flight without projecting, that it might not interfere with their progressive motion; but close and covered, in order to leave them a free passage through the air.

What wisdom! what economy! what admirable art, in the arrangement, and the whole disposition of the senses of animals! But perhaps we only know the smallest part of this wonderful mechanism; and, undoubtedly, most of our observations, in this respect, deserve less the name of discoveries than that of probable conjectures. If we could have a more perfect knowledge of the interior construction and use of the senses of animals, we should have still more reason to admire the wisdom of God. Let us, at least, employ the little we know of it, in praising and glorifying our common Creator. The more imperfect our knowledge of animals is, the more we ought to abstain

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from looking upon them with indifference and contempt. Let us rather consider them as a mirror of the divine power and wisdom. For even the animals afford us incontestible proofs that the Lord, who has made them, as well as us, is great in counsel, and abundant in means.

MAY XIV.

Order in the Succession of Flowers.

EACH plant appears on the earth in the order prescribed it. The Creator has exactly fixed the time in which one is to unfold its leaves, another to blossom, and a third to wither and fade. We have seen, some weeks past, the white winter blossom, or early violet, spring up. A long time before the trees ventured to open their leaves, and when the earth was still covered with snow, it dared to peep out; and was the first of all the plants, and the only one, which delighted the eye of the florist. Next appeared the saffron blossom, though timidly, because it was too weak to bear impetuous winds. With it appeared the sweet violet, the auricula so admired for its brilliant colours, and the variety of its species. All these plants, and some others which appeared on mountains, were the vanguard of the army of flowers; and their arrival, so agreeable in itself, had, besides, the merit of proclaiming the coming of a multitude of other flowers. We now see in reality, the other children of nature appear, not all at once, but in a regular succession. Each month displays the ornaments peculiar to it. The tulip begins to unfold its leaves and its blossoms. Soon the beautiful anemone will form its dome, and grow up round and full. The ranunculus will display all the magnificence of its leaves, and will charm our eyes with the most beautiful mix-

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ture of colours. And to crown the lovely assemblage of flowers, the rose will open and bloom with all the beauties which distinguish it. The carnation will shew itself with the elegance which makes it so superior to its companions.

Let us pause here, and reflect on the wise and beneficent designs evident in this succession of flowers. If they were all to blow at the same time, there would sometimes be a great superfluity of them, and, at other times, a total want. We should scarce have time to observe half their beauties, and we should too soon be deprived of them. But now, that each sort of flower has its appointed time and place, we may, in this pleasing succession, examine them, enjoy their charms at leisure, and acquire a fuller knowledge of them. This beneficent and wise attention of Providence procures one more very great advantage. It not only presents to us each flower in all its beauty, but it makes up for the frailty of all those lovely productions of nature: for though there are always some flowers fading, there are continually fresh ones coming to adorn our gardens, and to afford us uninterrupted pleasure. What goodness in our Creator, thus to favour mankind with a constant train of benefits? What goodness, not only to multiply his blessings, but to render them continual and lasting! He literally leads us through paths of flowers. Wherever we go, they spring up under our feet, that the sight and enjoyment of them may enliven and soften the pilgrimage through life. The same order, in which plants and flowers succeed each other, is also seen in the human species. From the beginning of the world, the generations of men have succeeded one another on this great theatre, in the order, time, and place, allotted them by the Creator. In the moment that some are born, others are returning to dust. While one is preparing to be useful to the world, another, who has already acted his part, is

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going off the stage. Who knows when his turn will come? Let us ever be prepared to resign our place with the tranquillity of a good conscience.

MAY XV.

The Zoophites.

THE zoophites, or animal plants, are nothing but insects; though, by their outward form, their immobility, and their manner of propagating by buds and seeds, they are very like real plants. These animals, as well as plants, can be multiplied by slips, and by ingrafting. Their animal nature only shews itself by the sensibility and voluntary motion observed in them. Most of the zoophites hold by a sort of root to the sea, or the waters they live in. Some inhabit stony and chalky places; others are surrounded with a shell, more like horn; and lastly, some are entirely soft and fleshy. They have this all in common, that, without any preceding connection, new zoophites spring out of the surface of their bodies. While these young animals are fastened to the stalk, they form together one single animal. They are nourished by it, and nourish it by turns. But as soon as they are loosened from the stock, they have their separate existence. The zoophites also multiply in another way, which much resembles the generation of plants. There forms a sort of bud which contains a young animal, which grows some time with the stalk, but at last falls off, and becomes a complete animal. Should one ever have supposed that there were animals whose form was so like plants, and to spring up like them? From the ideas we have always had of the nature of animals, could one ever have suspected that, in an animal, the brain, the heart, the stomach, and all the intestines necessary to life, should produce

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themselves? Could one imagine the existence of an animal, which has neither brain, nor heart, nor veins, nor arteries; which, from the mouth to the opposite extremity of its body, is but a hollow bag; which appears to be all stomach, all intestine, and whose very arms and legs are stomachs and intestines? Could one form an idea of an animal that could be ingrafted like a plumb-tree, turned inside out like a glove, and produce its young as a stalk shoots its branches? It is not fifty years since any man who would have hazarded such ideas must have passed for a madman. And yet it is now incontestible that there are such animals, who, not only by their outward form, but also by the manner of being perpetuated, resemble plants. By this discovery, made in the first half of the present century, natural history has gained a great deal. It may even be said that it has enlarged our ideas of the power of God. Since the discovery of animal plants, we have a new proof that God has distinguished his works by very small degrees: and that it is almost impossible to determine exactly where the animal kingdom ends, and where the vegetable begins. It is generally believed that the difference between plants and animals consists in the former having neither sensibility nor motion, and the latter having both. That is then the distinguishing character between plants and animals; but how faint the shade, how slight and almost imperceptible the line which separates the two kingdoms, when we think of the discovery of the zoophites! The several species of creatures rise, grow to perfection, and approach one another so nearly, that the limits which separate them can no longer be distinguished. Throughout all nature, we see something of infinite, as the peculiar characteristic of its great Author.

Eternal Being! who can conceive the immense extent of thy dominion? Who can even know

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the whole of any single part of it? What wonderful things will be discovered in future ages, that are now concealed from us! But what is already visible to us, sufficiently convinces us of thy infinite greatness.

MAY XVI.

The pleasure of Cultivating Fields and Gardens.

THE culture of fields and gardens is one of the most agreeable employments, and perhaps the only one that is compensated by a thousand pleasures for the trouble it gives. Most works confine men to a room or shop; but he who devotes himself to country pursuits is in the open air, and breathes freely upon the magnificent theatre of nature. The blue sky is his canopy, and the earth, enamelled with flowers, is his carpet. The air he breathes is not corrupted by the poisonous vapours of cities. A thousand agreeable objects present themselves to his sight; and, if he has any taste for the beauties of nature, he can never want pure and real pleasures. In the morning, soon as day-break again opens the brilliant scene of the creation, he hastens to enjoy it in his field or garden. The dawn proclaims the near approach of the sun. The grass springs up again revived; and its points shine with dew-drops, brilliant as diamonds, emeralds, and sapphires. Delightful perfumes, exhaled from herbs and flowers, embalm and refresh him on every side. The air resounds with the songs of birds, expressive of their joys, their loves, and their happiness. Their concerts are hymns of praise to the Creator, whose blessings they feel, in the agreeable light and heat of the sun, the relish of their food, the sweet instincts of nature, their alacrity and joy.

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Would it be possible, at the sight and sense of so many pleasing and affecting objects, that the heart should not be touched with delight, with love, and gratitude towards God? Can the mind have a more pleasing employment than that of contemplating and praising the sublime perfections of God, the greatness of his designs, and the beauty of his works? What contributes still more to render agriculture and gardening particularly agreeable, is the infinite variety of objects it affords, of works and employment, which attach us to it, by constantly affording new ones, and preventing the distaste inseparable from sameness. There is great variety of shrubs, fruits, herbs, and trees, which we plant, and which present themselves to us under a thousand different forms. Nature presents the husbandman with numberless agreeable changes. Sometimes he sees the plants springing out of the earth; others rising high, and unfolding themselves; others, again, in full bloom. Wherever he turns his eyes, he discovers new objects. The heavens above, and the earth beneath, afford him an inexhaustible fund of pleasure and delight.

Bless, bless the Lord. Praise his works, and trace him in every field, and through every operation of active nature. It is He who ordains the return of spring, and tells the harvest when to fill with corn the granaries of the righteous and unrighteous man. O! when the soft breath of the zephyrs (emblems of his goodness) comes in spring to cool the air, let us think of Him: When in autumn the boughs of the trees bend under the weight of his gifts, let us remember Him: He crowns the year with his blessings. He is the source of all good. He sends the rain to water the barren field; and it is through Him alone that the earth becomes fruitful. Praise the Lord. Behold, the forest, the river, and the vale! they all discover traces of his goodness. We find him in the mea-

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dows, and in the enamel which adorns them. Every where we trace the Lord.

MAY XVII.

The Tulip.

OF all flowers the tulip has certainly the finest form. There is no silk-mercer, who, in the variety and beauty of colours, or the mixture of light and shade in his silks, can approach to the perfection of this flower. The height of the tulip, its form, its colours, its drawing, make it the queen of flowers. And if we consider that every year there blow millions of tulips, which all differ from each other, the proportion and beauties of which are infinitely varied, we must have lost all feeling, not to be struck with admiration. Certainly, to be convinced of the existence of a wise and good God, we need only contemplate a tulip in full bloom. Is it possible that such a masterpiece of nature could be produced by a blind chance? It is true that at present the tulips are produced and perpetuated by roots. But from whence came the first production of this machine, and that first arrangement, of which all the following revolutions are only the consequences? Must we not necessarily admit an intelligent Cause, whom we call the Creator of the world? It requires as much wisdom and power to create one tulip, from whence ten others proceed, as to create ten of them at once. For the new-comers must have existed already in their fore-runners; and it is evident that their form and number must have been determined. Therefore, when we look at a bed of tulips, let us not limit ourselves to the admiration of their beauty, but let us admire, above all things, the infinite wisdom of God, who has traced the drawing of these flowers, and exe-

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cuted them in such perfection. Whatever charms the tulip has, it loses a little of its value, in being merely formed for the eye, and having no sweet smell. When we compare the carnation to it, which, joined to the beauty of its form, has the most exquisite perfume, we soon forget the gaudy dress of the tulip. Such is the fate of persons who are endowed with beauty, and set off their charms with every ornament, but have neither good sense nor a good heart. It is much more desirable to have fewer outward beauties, with an amiable mind. The former captivates but for a very short time, while the beauty of the mind remains, when all the charms of form are fled; and the esteem which our virtues inspire is constant and durable. A virtuous soul is pleasing both to God and man. It is formed by the rules of wisdom, and its ornament is innocence. The perfume of good works is spread around wherever it exists, and it will one day be transplanted into the garden of Paradise. One observation which the history of plants affords us, is, that the more beautiful a flower is, the sooner it fades. In a short time, nothing of that blooming tulip will remain but a withered dead stalk. Its life and beauty last but for a few weeks; age destroys its charms; its leaves fall off; its colours fade; and the tulip, before so like a beautiful virgin, is no longer any thing but a frightful skeleton. What an useful lesson is this for us! See how little we can depend on exterior charms! How uncertain is frail beauty! How near are we to death! For what is our life but the life of a flower? We sometimes resemble it in beauty, but we resemble it likewise in the shortness of our days: for "Man, that is born of a woman, is of few days, and full of trouble. He cometh forth like a flower, and is cut down." Let us so live, that when that time comes, good people may regret us, and weep over our graves.

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MAY XVIII.

Reflections on Grass.

HOWEVER beautiful the flowers may be which are cultivated in gardens, through the care and industry of man, we should know but little of the wonders of the vegetable kingdom, were we to limit our researches to the contemplation of a flower-garden. Each field is a scene of the wonderful works of God. In the first place, can any thing be more astonishing than the prodigious quantity of grass in a field? Suppose that a field was no more than a thousand paces long, and of equal breadth, its surface would be a million of feet square: Now, if we suppose, that in making a step, we cover only ten blades of grass, there must be in each square pace an hundred of these blades of grass; consequently, in casting a glance on that field, we see at once a hundred millions of these machines so curiously formed. Let us give to each blade of grass but an hundred veins, by means of which it draws nourishment from the earth, there would be, by this account, ten thousand millions of regular and perfect veins. But who can suppose that it would require only an hundred veins for its nourishment and growth, when each blade of grass is a series of nothing else? How immense a multitude of them must there be in the field! And how small, in comparison, is the number of the plants and flowers which grow and are cultivated in gardens! Why has the Creator so prodigiously multiplied the productions of the vegetable kingdom? Why, from each sort of grass does he cause to spring such a numerous multitude? It is, undoubtedly, that beasts as well as men may find sustenance. The fields are, properly speaking, the magazine

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for animals. Another circumstance worthy of observation, in respect to grass, is, that it neither requires sowing nor tillage, but grows perpetually independent of our care.——How sad and barren would our pastures and meadows be, if we were loaded with the care of sowing the grass-seed, and of afterwards watering what our hands had sowed and planted? But, at the creation of the world, God so provided, that a sufficient quantity of grass should never fail. From that almighty word of the Creator ("Let the earth bring forth grass, the herb yielding seed,") proceeds the constant fertility of our fields. To reflect on the colour chosen for the grass, is sufficient to make us sensible of the wise and beneficent care of the Creator. If all those fields were red or white, who could long bear the dazzling light of them? If the predominant colour was darker and more gloomy, what a melancholy appearance would all nature have? The green is between both colours; it agrees with our eyes, and pleases and refreshes them. It is also remarkable, that, in this colour, there is such variety of shades, that there is not a plant, the green of which is exactly as pale or as deep as that of another. It is then evident that, in the arrangement of the vegetable kingdom, God has not provided less for our pleasure, than for our convenience. This double attention is well calculated to convince us of that supreme goodness and wisdom which extends over the whole earth. May the proofs of it, which daily present themselves to our sight, never make us cold or indifferent to it! On the contrary, let us employ that reason which we owe to God, in making ourselves, through all his works, acquainted with that infinitely wise and merciful Being. Every time we walk in the fields, let us indulge these meditations: Lord! with what wisdom hast Thou formed these plants! With what goodness dost Thou not dispense both rain and sunshine for the growth of

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herbage! Greens and simples which strengthen our bodies; milk, which affords us a food so sweet and wholesome; the flesh of animals, which we enjoy in such abundance; all these advantages, and many more, Thou grantest us in the use of the fields. I bless Thee for them, O God my Creator! and will bless Thee evermore.

MAY XIX.

Sentiments which the Contemplation of the Sky excites.

WHAT, but a spirit of unlimited knowledge and power, could form that superb vault over our heads? Who could have given motion to those immense globes; that perpetual motion, whose swiftness is inexpressible; a motion, which even the smallest grain of sand could not have of itself? Who ordered those enormous masses of heavy and lifeless matter to take so many different forms? From whence proceeded that connection, that beauty and harmony, which shines through every part of the whole? Who regulated all things so exactly, according to number, weight, and measure? Who prescribed to those immense bodies such laws as none could discover, but a mind endowed with the greatest wisdom? Who measured those vast circles in which the stars move, without going out of their line? Who put them into the course they run, and which they are to run, without interruption? All these questions lead us to Thee, thou adorable Creator! self-existing, independent, and eternal Being! It is to Thee the celestial bodies owe their existence, their laws, their arrangement, their power, and all the advantages they procure to the earth. What sublime ideas must rise in our souls, when we think of these great objects! If the space, in which so many

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millions of worlds move, cannot be measured by our understanding: if the globes, which take their prodigious courses there, are of a size to astonish us; if the fabric of the universe, constructed by the Creator, is of such immensity, that our ideas are lost in it, what must thy greatness be, O God! and what understanding is able to conceive it! If the heavens and all their host have so much magnificence, beauty, and majesty, that the eye can never be satisfied with contemplating, nor the mind with admiring them, what must be thy beauty, Thou eternal Being, of whose splendour and glory these creatures are but faint and imperfect shadows! What must be the incomprehensible extent of thy knowledge and understanding, since Thou seest with one glance the whole immense space, all the numberless bodies in it, and art so intimately acquainted with the nature and properties of all the beings Thou hast placed there! What depths of wisdom and knowledge must be in Thee, O Lord! who hast formed such admirable plans! who hast measured, and calculated every thing with so much exactness, that nothing can be added or taken away! Who didst conceive and establish the several laws which all the globes were to observe! Who didst employ the wisest means to accomplish them! And who wast capable of forming such connection, relation, and harmony, through all thy works! How great must thy power be, to be able to realize all these plans! to guide and direct the most immense bodies! to animate all by thy breath! and to preserve all by thy Almighty word!

But can God have given us such proofs of his greatness and glory in vain? Shall it be to no purpose that the celestial bodies declare the infinite knowledge and wisdom of the Almighty? Shall they in vain pour upon us the abundance of blessings which the Divine Goodness bestows through their means? Is not all this done, in or-

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der that intelligent creatures should take notice of it, reflect, and make it the subject of their contemplations? Masterpieces of a skilful artist are admired; what stupid indifference would it be, not to admire the infinite art and wisdom manifested in the works of the Most High! Those are honoured who have talents to perform great and beautiful works: with what respect, with what profound humility, ought we not to prostrate ourselves, and adore that God who constructed the magnificent fabric of the universe, and displayed so much majesty and glory in it? The heavens declare his greatness, and proclaim him Lord of all the world. All the celestial bodies obey him, and all their revolutions are made according to his laws. And shall man alone refuse to obey this Governor of the universe, who is also his Lord and Creator? Shall he refuse to be guided by laws so wise and useful to him? On every side the effects of Divine Goodness flow in upon us, and bring us innumerable blessings, comforts, and pleasures. What love, what gratitude, do we not owe him! With what earnestness ought we not to imitate David, who cries out, on contemplating the works of the Lord, "I will magnify thee, O God, my King! and I will praise thy name for ever and ever! Every day will I give thanks unto thee, and praise thy name for ever and ever. My soul praise the Lord. Hallelujah!"

MAY XX.

Fruitfulness of Plants.

THE magnificence of the earthly creation shines in nothing more than in the astonishing fertility of plants. One single plant can produce thousands; even millions of others. One tobacco plant may yield forty thousand three hundred and twenty

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grains of seed; and, if we calculate in proportion the produce of four years, we shall find, that, from one single grain, there may spring two millions six hundred and forty-two thousand nine hundred and eight millions, two hundred and ninety-three thousand three hundred and sixty-five millions, and seven hundred and sixty thousand grains of seed. An elm, twelve years old, has often five hundred thousand grains of seed: what a prodigious number would that produce in a few years! Suppose the tree had but an hundred thousand buds, and that the shoot of each year contained but five of them, there would be every year five hundred thousand plants, which may be considered as new. If we add to that what is produced by the increase of the root, by ingrafting, &c. we shall only be surprised that the earth has not yet been consumed by plants. But we must remember the numerous multitude of animals, who owe their food to the vegetable kingdom. They annually consume so great a quantity of plants, that, if nature had not endowed vegetables with very extraordinary prolific qualities, there would be reason to fear their total destruction. But whilst animals are destroying them, they often propagate them at the same time. While they consume certain sorts of fruit, they scatter the seeds about, and often to a great distance. This dispersion is necessary, in order that only one sort of plant should not fill a whole field. It is with the same design that some seeds have little feathers or wings, to be dispersed about by the wind. It is certain also, that in general the plants are more fruitful than animals. This may be proved, by comparing trees with four-footed animals. The former produce annually, sometimes for several ages, a great number of new trees; whereas the greatest quadrupeds, such as the elephant, the mare, &c. have but one, or at most two young ones, and are often barren. The lesser quadru-

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peds, such as the dog, the cat, the rat, &c. are much more fruitful; but still not to be compared to the fertility of trees. Fish and insects approach nearer to it: tench lay about ten thousand eggs; carp, twenty thousand; and cod, a million. Now, compare that fruitfulness to the wild rose, mustard, or fern, and it will be found that those plants, and many others, multiply much more than either fish or insects, particularly if it is observed that almost all plants multiply in several ways, whereas most animals have but one way of propagating. A tree may produce as many new trees as it has branches, boughs, and even leaves.

With what wisdom, therefore, has God proportioned the animal and vegetable kingdoms! If the multiplication of vegetables was less considerable, a great number of animals would die of hunger; our fields, our meadows, and gardens, would be deserts, with only some few plants scattered here and there. On the other hand, if the Creator had ordained that the granivorous animals should increase more than the plants, the vegetable kingdom would soon be exhausted, and several species of animals would be at an end. But, according to the relation between the two kingdoms, the inhabitants of both multiply in proportion, so that no species should perish.

Thus, O man, abundance and pleasure surround thee on every side; for it is to thee that the Creator has made the vegetables so astonishingly fruitful: it is for thy support, thy pleasure, and thy health, that he has produced such variety of plants, and in such great abundance. Count, if you can, what covers one single field; their number is inconceivable; and this innumerable multitude is an image of the immensity and omnipotence of the Lord; who, throughout all nature, "openeth his hand, and filleth all things living with plenteousness."

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MAY XXI.

Description of the Beauties of Spring.

NOTHING is more worthy of admiration than the revolutions which spring occasions upon our globe. In autumn, every valley, field, and forest, present us with the image of death; and, in winter, nature is deprived of every ornament. All the animals are melancholy; the inhabitants of the forest conceal themselves, and are silent: the earth becomes a vast solitude, a desert, a grave; and nature appears to be fallen into a state of lethargy and insensibility. In the mean time, she silently labours, whilst we, alas! forget the secret influence of Divine Power, preparing for us the renewal of nature. All that appeared dead is again animated, and every thing waits for the same revival. In the trees alone, what endless changes take place! First, the sap (which in winter had entirely forsaken the trunk and branches) rises slowly up through its invisible channels, and particularly under the bark, through ways which can only be guessed at, but not discovered. This sap serves to swell the buds: and how many treasures of the Divine Power are there not contained in those little recesses! the leaves, with their cheerful green; boughs which are to pierce between the leaves when opened; new buds on those boughs, full of leaves, though still invisible; then, that multitude of blossoms, with the sweet exhalations which embalm the air; in those blossoms fruit; and in the fruit the seeds of an infinite number of other trees. The cheerful light of the sun transports and animates the soul; and the activity of nature, in the plants around us, charms the sight. There is not a field, which does not present a beautiful landscape to the eye, and flowers to the smell. Almost every

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bird sings its hymn with more or less melody. How cheerful the song of the linnet, hopping from branch to branch! She extends her voice, as if she had formed the design of particularly drawing the attention of man, to delight him. The sprightly lark rises in the air, and seems to salute the day and the spring with her shrill note. The cattle, by their various cries, express the joy with which they are animated. In the rivers we see the fish, which, during the winter, had fallen frozen and motionless to the bottom of the water, now rising near the surface. They have recovered their former vivacity; and their pliant, gentle, pleasing motions, amuse our sight. Oh! how can we so often behold all these objects, and not continually feel the most profound and respectful admiration of the greatness of that eternal Being, whose power so gloriously manifests itself! O! let us never contemplate a tree crowned with leaves, a field covered with waving corn, a meadow enamelled with flowers, a majestic forest; let us never gather a flower, nor walk in a garden, without recollecting, that it is God who gives us the delightful shade of trees; that it is he who makes the flowers so beautiful, and gives us their perfume; that it is God who clothes the woods and meads with their beautiful verdure, so pleasing to the sight; God who gives life and happiness to every creature; God, through whom we have our existence, and enjoy the sweets of spring.

MAY XXII.

The Language of Animals.

MAN, properly speaking, is the only animal who can be said to have language; and it is particularly by this circumstance that he shews his superiority over all other animated beings. It is by means of speech that he extends his empire

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over all nature: that he rises towards his divine Author: contemplates, adores, and obeys him. It is by this faculty, that he learns to know himself and all the creatures around him; and to make them serve for his use. Every animal but man is deprived of this faculty, because they are void of reason; and it is reason which capacitates us to learn languages, and the use of speech. But as animals make their wants and feelings known by natural signs; as they utter certain sounds, which express the sensations that affect them, one may so far allow that they have a sort of language. The variety of these tones, their number, their use, and the order in which they follow one another, form the essential parts of their language. To form a just idea of it, it is not necessary to have recourse to deep researches; it is enough to observe the animals daily before our eyes, and with whom we have a sort of intimate connection. Examine the hen with her chicks: if she finds any food, she calls and invites them to it. They understand her and come instantly. If they have lost sight of this tender mother, their plaintive cries express their anguish, and desire to see her again. Attend to the different crows of the cock, when a stranger or a dog comes into the poultry-yard, when a kite, or any other enemy appears, and when he calls or answers his hens. What do these lamentable cries of the turkey mean? See her chicks all on a sudden concealing themselves, and lying so quiet, one would say they were dead. The mother looks up to the sky, and her anxiety increases; but what is it she sees there? A black speck, which we can scarce distinguish; and this speck is a bird of prey, which could not escape the vigilant and piercing eyes of this mother. The bird of prey disappears. The hen gives a scream of joy. Her anxiety is at an end. The chicks revive, and gather again happily about their mother. There is such variety

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in the language of the dog, it is so rich and fruitful, that it would be enough of itself to fill a dictionary. Who can be insensible to the joy that this faithful servant shews at the return of his master. He jumps, he dances, he runs here and there, turns quick and lightly round his master, stops all at once; fixes his eyes on him, with the greatest tenderness; draws near him; and licks and caresses him repeatedly. Then, beginning his play again, he disappears, and returns dragging something after him; puts himself into all sorts of pretty attitudes; barks; tells every body how happy he is; and shews his joy a thousand ways. But how different are these sounds from those noises he makes at the sound of a robber, or those he makes on seeing a wolf. If we follow a dog in the chace, we see how he makes himself understood by all his motions, and particularly with his tail. How well adapted his signs are to the discoveries he wishes to make! This affords us an opportunity to admire the wisdom and goodness of the Supreme Being. What beneficent attention he has shown towards animals, in granting them the power to express by sounds their wants and feelings! From their organization, and the nature of their souls, it was impossible they should speak the human language; but they would have been much more to be pitied, and less useful to us, if the Creator had entirely deprived them of the power of making themselves understood. To compensate them for the want of speech, he endowed them with the address to communicate, by a thousand little ways, their feelings to one another, as well as to mankind. He has given them organs proper to produce and vary a certain number of sounds; and their make is such, that each species has particular and distinct sounds, by which they make themselves understood. In a word, the Creator has given as much force to the language of animals as their

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nature would admit of, and all that the end for which they were created required. The language of animals consists only in a number of inarticulate and imperfect sounds. They have no ideas, but those prompted by their senses; because they are incapable of learning a methodical language. They only know objects by some qualities evident to their senses, to which all their judgments and comparisons are limited. As for us, we possess faculties in all respects much superior. We can rise to general notions, and separate the object from the qualities which distinguish it. We can, by means of an infinity of sounds (articulate and arbitrary), express all our conceptions. We can learn the connections which unite us to other beings, act in consequence, and thus ensure our happiness.

O Thou the Creator, what gratitude do we not therefore owe Thee! Grant that we may never forget this important part of thy blessings; but, on the contrary, that each time we make use of speech, we may reflect on the excellence of our privileges, and the greatness of thy wisdom and goodness.

MAY XXIII.

The greatness and number of the Creatures on the Earth.

LORD, how great and numerous are thy works! We owe this testimony to the works of God. If we only knew those which the earth contains, how great is the extent of this globe, the abode of so many different nations! Mankind occupy vast domains; and yet how many solitudes and deserts are there, which have never been inhabited by man! Neither does the land, taken in the whole, fill near so great a space as

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the sea, that prodigiously extensive element. But if the earth in itself is an example of the greatness of the Almighty's works, we cannot cast our eyes on the creatures it contains, without admiring the number and variety of them. In the first place, we find innumerable sorts of stones, minerals, and metals, concealed in the earth; then, what astonishing variety among the trees, the plants, the fruits and simples, which cover its surface! Notwithstanding all the pains that have been taken, to observe and class the different sorts of vegetables, it has never been compassed, nor will all the future efforts of naturalist arrive at it. Let us next consider the living creatures. What immense variety of them there is between the eagle and the gnat, the whale and the gudgeon, the elephant and the mouse! The disproportion is prodigious, and yet the whole space between them is filled with living creatures. The animal species come so near one another, that it is sometimes difficult to distinguish the one from the other; yet the species is so multiplied, that, from the gnat to the elephant, they form a sort of chain, in which each link holds by the preceding one. In seas, lakes, and rivers, on the surface and in the bosom of the earth, there is no place, which, some way or other, does not contain a living creature. Yet, however great the number may appear of the animals visible to the naked eye, they cannot be compared to the number of those which are too small to be seen without a glass. By the help of the microscope, almost incredible discoveries have been made, of which all may be convinced. There, in some measure, a new world presents itself, which was before utterly unknown to us. There, such living creatures are seen, that imagination itself can scarcely form any thing so extremely small, since one of them is not near so large as the millionth part of a grain of sand. And it is not only their number and variety, it is also

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the beauty and delicacy of their form which ought to strike us with astonishment. What appears dull to the naked eye, or even what escapes it entirely, if it is seen through the microscope, has an inconceivable lustre and delicacy. Gildings which art cannot imitate, shine in the smallest grain of sand, but, particularly, in the limbs of certain insects; on the head, and in the eyes of a little fly: and in the construction of the lowest of living creatures, their exact symmetry and admirable order is observable. We find, in a word, that millions of creatures, so small that the eye can scarce distinguish them, but by the help of glasses, have, notwithstanding, as perfect an organization in their species, as the greatest animals with which the earth is peopled. Such considerations must give us a lively sense of our own littleness. I lose myself in this innumerable multitude of God's creatures, who would be sufficient to witness his greatness, though I, and millions such as I, had never existed.—O Almighty! how immense is thy dominion! In every element there are beings whom thou hast created and preserved. Each grain of sand is a dwelling for insects, who are also in the class of thy creatures, and are links of the immeasurable chain. Here my ideas are lost in infinity. The more I reflect on the greatness and variety of thy works, the more I feel the limits of my understanding. I heap number upon number, and yet I can scarcely find a sum which comprehends the number of thy creatures. It is impossible to determine it. We have only to admire and adore.

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MAY XXIV.

Spring is an Emblem of the frailty of Human Life, and an Image of Death.

AT this season, we need not go far to seek images of frailty and death: they present themselves on all sides, being connected with almost every beauty of nature. Undoubtedly, the Creator's design, in this respect, was to remind us of the uncertainty of the things of this world, and to repress the dangerous propensity we have to place our affections on objects so vain as all those in nature are. Spring is the season in which the plants receive a new life, and at the same time, that in which most of them perish. Serene as the days in spring are, they are often suddenly obscured by clouds, rain, and tempest. Sometimes the moon appears in all the lustre of its charms: then, before the sun rises to mid-day, its splendour, which had flattered us with the hope of fine weather, disappears. Sometimes, also, this hope is fulfilled, and the days of spring shine in full beauty. But how transient are those serene days! How swiftly they pass away! They vanish, even before we have well enjoyed them. It is thus that the best of our life flies away. Often, in the morning, every thing smiles upon us, every thing promises us joy and happiness; but, before evening, nay often before noon, we meet with vexations and shed tears of sorrow. Let us look back on those days of our youth, which we may call the spring of life. How short have been the pleasures of our youth! how great the variety of pleasures we enjoyed! But where are now those happy moments, those ravishing delights? What is become of that constant sprightliness, and those roses of youth, which were seen

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in our cheeks? We no longer have a taste for those turbulent pleasures which then intoxicated us. What now remains of those fine days that are past? Nothing but a melancholy remembrance of them, unless we have sanctified them, by devoting them to our Creator. With what force the spring points out to us the frailty and end of life! Behold how far its charms extend! Behold the trees full of blossoms! But let us not too much exult in their rich ornaments: shortly they will return to that dust from whence they came. All that showy generation must die in the same spring which gave them birth. It is thus that our lives vanish. An unforeseen death hurries us to our graves, whilst the health and strength we enjoyed promised us a long course of years. Sickness and death often come upon us so much the more unexpectedly, as their approach is concealed under an appearance of youth and health. Let every one behold an image of himself in the blossoms of spring, and there read his own uncertainty. Let us address them in this language: O! ye who are endowed with such charms! ye, the glory of the gardens, and ornaments of the valleys! how transient is your bloom! But what a picture! how instructive to me! That death which I carry in my bosom, I shall soon perhaps feel its stroke. Thou rose, thou livest but a day; and as for me, I may die in an instant.

Though these thoughts ought to render us serious, yet should we enjoy both the spring of nature, and the pleasures of life, as they are bestowed upon us by the Creator; but, at the same time, let us mix with these enjoyments, reflections which arise from the nature of spring and life. The thought of death is very consistent with the enjoyment of every innocent pleasure. Far from infusing melancholy into our hearts, it should teach us to rejoice evermore in the Lord;

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it should guard us against making a bad use of earthly pleasures; it should inspire us with a desire of solid and uninterrupted happiness. The beauties of the visible world should give us an idea, what must be the infinite beauty of the invisible and heavenly world; and, finally, when the time comes, in which our lives must wither and fade away as the grass of the field, then we may say, with Christian fortitude, Though my life, like a spring flower, wither and turn to dust; though these cheeks, wherein the roses of youth shine, be a prey to corruption; I still hope for a better life, which I shall never lose; and the body, in which I shall then be clothed, will never decay.

MAY XXV.

Spring is an Emblem of the Resurrection of the Body.

MOST of the flowers we admire were once coarse and shapeless roots; but now they adorn the earth, and charm our sight. What a fine image this is of the resurrection of the righteous, and the state of their bodies re-animated! As the roots of the most lively flowers, while buried in the earth, are shapeless and without beauty, but when in bloom have a thousand charms, so is the human body: while in the grave, it is an object of horror, but at the resurrection it will experience a most astonishing change: for, "what is sown in corruption, is raised in incorruption; what is sown in dishonour, is raised in glory." As soon as spring takes place of winter, life and joy take place of the melancholy impressions which a severe season makes on the mind of man; and the first fine days make us forget the long winter and its darkness. Thus shall we forget, at the great day

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of the resurrection, all the sad and gloomy days of our past lives. The clouds of affliction in this world cast a gloom upon our countenances; but as soon as the light of a new creation dawns upon us, grief is no more; nothing more can disturb the serenity of our souls.

Spring is the general renewal of the whole earth. However dull it was to us in winter, it is now no less pleasing and beautiful in its appearance. Every thing enchants and delights us; and we might almost fancy ourselves every spring transported to some new and cheerful habitation. It is thus, that, at the resurrection, we shall find ourselves transported into a new, magnificent, and charming dwelling. The new heaven, and the new earth, will be free from all the apparent or real defects of the globe which we now inhabit. Peace, order, beauty, and righteousness, will make our future abode the happiest that is possible to be conceived. When the warm rays of the sun have penetrated into the earth, millions of plants and different sorts of flowers spring out of its bosom. It will be the same in that great day when generations will rise out of the dust in which they were buried. As the spring flower rises from its seed to the height of bloom and beauty, so will our bodies, deposited in the grave, rise on that day in full glory, clothed with celestial beauty. Spring is the æra of vegetation for grass, flowers, and plants. It is then that every thing, which has sprung up out of the earth, opens every day more and more, and grows visible. So will the day of resurrection be the æra of the unlimited progress which our immortal souls will make in all that is good. No weakness will there stop us in the road to perfection. We shall rise from virtue to virtue, from felicity to felicity. In spring, all nature seems roused from sleep to praise its Author.—The songs of all the inhabitants of the air unite

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as if to glorify their Creator with an universal hymn. Similar songs of joy will be chaunted at the day of resurrection, by the elect of God restored to life. O! with what delight will our hearts be filled! We may judge of the greater by the less. If the earthly spring is so rich in enjoyment, what will be the beauty and treasures of spring in the new world?

MAY XXVI.

The attractive power of Bodies.

WE often see two bodies draw near to one another, without being pushed together by an exterior force. The motion, which produces this effect, is called attraction or gravitation. This power of attraction proves to be one of the principal springs of nature. It is by means of this law, that fluid bodies rise up into the capillary vessels; and it is partly the cause of the circulation of the juices in plants, and even in animals. It is true, that the power of expansion in the air contributes its share to it, at least in plants; for there is a portion of air amongst the fluid which nourishes them. Vegetables are also provided with veins, which suck in the outward air, and, at the same time, help to draw up the juices: however, attraction is certainly one of the chief causes of the phenomenon. No one is ignorant that the human body is a series of numberless capillary vessels, where the humours are continually in motion; and this motion is partly regulated by the laws of attraction. A great number of the phenomena we observe in the corporeal world, have this attractive power for their principle; and it is the most satisfactory way of accounting for the motion of the celestial bodies. Those enormous globes, separated from each other at such

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immense distances, must be united by some secret connection, to form such a whole as our solar system. And it is probable that the union of the celestial bodies, their direction, the law which obliges them not to deviate from the course prescribed them, the motion of the planets and comets round the sun, all depend on its attractive powers, and on the gravitation of the bodies which incline towards it. How admirable is that wisdom, which, by means of one and the same law, produces the vegetation of a blade of grass, and the motion of all the whole system of worlds!

These reflections naturally lead us to adore the Supreme Wisdom. If it appears in the celestial bodies, it is no less visible in the government of rational creatures. The Creator acts, in this respect, upon principles equally wise, according to the same laws, and all with the most wonderful simplicity. But we are so blind that we are not always sensible of it, because we do not think any thing worth our attention that is not strikingly great. But why should we not see, in the things which appear to us of little importance, the traces of wisdom so evidently impressed upon them! When cities and countries are swallowed up by earthquakes, or laid waste by fire and water, we become attentive: we then see, that such revolutions are the works of the Master of the universe; and his wise providence is acknowledged. Does not the greatness of the Supreme Being appear as much in the smallest blade of grass, and in the poorest insect, as in the motion and harmony of the spheres? Yes, in the small as well as in the great, God manifests the glory of his attributes. It is owing to our inattention and negligence, if we do not every where see it, even in the smallest beings, and most trifling events. To be convinced of the wisdom and goodness which presides in the government of providence, we need not go to distant objects; we need only dwell on what relates

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to ourselves, and on the particular dispensations of God in this respect. Our own lives, and the events with which they are marked, may teach us how wise the means he has chosen are to make us happy; how many little circumstances his providence has made to concur towards the execution of his designs; and how numerous the means are which he makes use of to preserve us from evils, or to prepare for us blessings.

MAY XXVII.

Complaints of Mankind, relative to certain Inconveniencies in the Laws of Nature.

"WHY is the human body, from its constitution, liable to so many infirmities and accidents?" Whoever asks this question, let him say, if it is possible to form one's self a body which unites more advantages in itself than that which we have received from our Creator. It was incompatible with nature, and the chain of things of this world, that man should have an invulnerable body. If one of our fellow-creatures is deformed, another lame, a third deaf or dumb; is it a reason to murmur against God? Are those defects so common as to give us reason to complain? If, after these questions, any one should still think they have reason for discontent, let them reflect on the following truths. It is of use to men in general that they may not want examples of the defects to which the human body is liable. For, when a person, perfect and well made, compares himself with one that is crooked and deformed, he is sensible of all the advantages of well-formed limbs; he learns to value properly a gift till then unthought of, and to take more care to preserve it. How valuable is each eye, each ear, each organ of sense, each joint, each limb, if we

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only observe the condition of the few people who are deprived of them!—Would any of us part with a limb, in exchange for the greatest treasure? Are not our bodies more beautiful and regular than the finest building, or the most curious machine? And, though the latter are very inferior to it, we are far from attributing the assemblage of their parts to chance. "Why are the countries of the earth so different from one another, sometimes cold, sometimes damp, sometimes low, and sometimes high?" But, O man, if thou hadst the power to form a globe, wherein every thing was to be for the advantage of men and animals, would thy understanding furnish thee with a plan better than this? The countries of the earth, by means of their difference, produce a variety of exhalations and winds, which occasion that mixed air, wherein experience tells us that men and animals live healthy and content in most places, and wherein plants also grow and propagate. "It is, however, allowed, that the variation in weather is not beneficial to all men, or to all countries." But, has not the preceding weather influenced the following, as the climate of one country often influences another? Are we capable of judging of the whole? Must a million of farmers sigh in vain for rain, because dry weather would suit the private convenience of one family? A certain temperature of the air may occasion, here and there, a transient barrenness; but, can it be called an evil, if it was necessary in order to hinder the air from corrupting? Ought the east wind, which is favourable to a whole country, to cease to blow, because its violence may cause some shipwrecks, or be hurtful to some consumptive people? Is it reasonable, when we cannot take in the whole, to find fault with a part? "Why are there so many hurtful animals?" Would it then be better to have no beasts of prey, small or large, upon the earth? They put a stop

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to the number of animals that would otherwise overpower us; and, it is because many animals serve for food to beasts of prey, that the number of living creatures increases every year. If these beasts of prey did not exist, the carcases of the animals on which they feed would not only be useless to living creatures, but would be hurtful. Every year, animals thus devoured, are replaced by others; and in most cases population depends on the quantity of sustenance. Thus gnats, and other insects, would soon want food, if the animals, whose prey they are, did not prevent them from multiplying too fast. "Why has the Creator regulated the course of nature by such invariable laws?" It is in consequence of such regulations, that man's experience and labour enable him to make use of his understanding and powers, so as to be in some measure master of his own welfare. Would we choose to inhabit a world, where, when we were hungry, we had only to wish, and we should be satisfied; where our clothes should fall from the clouds, if, when travelling in a cold night, we neglected providing any? Or would we, at pleasure (without recourse to other methods) walk sometimes on the ground, sometimes in the water, sometimes in the air; a world where the stomach should never be overloaded with the weight of food; where an iron hatchet would swim, if, by accident, we let it fall into the water; where bodies, going out of their natural direction, should describe an oblique line, lest their fall should hurt any body? would we wish to inhabit a world, where we should have no occasion to do any thing; where we could not in any way promote our own pleasures; where there should be no rule, no fundamental law; where, in fine, the best, the bad, and the worst, being equally unknown, nothing could make us attend to the laws of nature?

Doubtless, there will ever be a number of things

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in nature, the purposes of which, or their relation with the whole, must ever be concealed from us. But on all occasions let us rest on this principle, that God does every thing for wise and beneficent purposes. And, when these enigmas, these inexplicable things, present themselves, let us say with the Apostle, "O the depth of the riches, both of the wisdom and knowledge of God! How unsearchable are his judgments, and his ways past finding out! For who hath known the mind of the Lord, or who hath been his counsellor? Or who hath first given unto him, and it shall be recompensed unto him again? For, of him, and through him, and to him, are all things. To whom be glory for ever. Amen.

MAY XXVIII.

Sins we are apt to commit in Spring.

IS it possible that we can profane, by sin, this season, so peculiarly formed to prompt us to the practice of piety? Would it not be natural to suppose that, in spring, each field would be to us as a temple, where we should offer up to our Creator endles sacrifices of prayer and thanksgiving; where each thought, each sentiment, and action, should tend to his glory? But, alas! we daily see the ingratitude of man towards his heavenly Benefactor. We behold nature renewed, we behold the flowers, and a thousand other delightful objects, without thinking of him who made them all; or, if we do think of God, we forget to return thanks for his wondrous goodness. This is the reigning vice of the season, and is, at the same time, the source of all the faults committed in it. Man is the only creature on earth insensible of his own happiness; and yet he has the faculty of feeling it to its utmost extent. This must be ad-

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dressed to the ungrateful and insensible heart; for what attention can be expected from those who pay so little to that God who speaks throughout all nature in a voice so intelligible and strong! Yet how is it possible to forget our Creator! All his works proclaim him; and we can neither know ourselves, nor the world we live in, without knowing our God. Each creature reminds us of its Maker; each part of the vast scene of nature is filled with the Deity. He shews himself in each blade of grass, each flower, and bird. He constantly borrows the mild and persuasive language of nature, and addresses himself to our senses, our reason, our consciences, and all our faculties. Let us only listen to their language, and we shall no longer be insensible or ungrateful. How ought we to employ these days? It is right to leave our rooms, where we have been confined, and to go and breathe the wholesome air, and walk in the fields and gardens, in order to contemplate the beauties of the season; but let us take care not to make a bad use of them, by giving way to extravagant pleasures, which lead to folly and repentance. We shall not be able truly to enjoy the fine season of spring, till, by fixing our attention on the works of our Creator, we discover from reason his divine goodness and power. Then will our hearts experience joys much superior to the pleasures of those who forget their Maker. Why should we seek those pleasures which offend God, and wound our consciences? Here are purer enjoyments, and it is for these only that we are endowed with reason and sensibility. In the next place, let us turn to those who, at this season of the year, give way to too much care and anxiety. When in the depth of winter, and oppressed with many wants, they grow anxious and melancholy, then they may deserve some indulgence; but, at this time, it is an unpardonable doubt of Providence. "Behold the lilies of the field, how they

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grow; consider the fowls of the air; they sow not, neither do they reap, yet your heavenly Father feedeth them." For whom does God cause the seed to shoot out of the earth? For whom is it adorned with flowers? For whose use does he provide each animal with food? O ye of little faith! put your trust in your Father, who is in heaven. Spring is the season of hope. Give it admission to your hearts; and, if any anxiety should still find a place there, cast your eyes on the meadows and fields, and remember the words of our Redeemer: "If God so clothe the grass of the field, and feed the fowls of the air, shall he not much more clothe you? Are ye not better than they? Let us then employ the most agreeable part of the year in contemplating the wondrous works of God. Let the pleasures which nature now lavishes upon us, lead us to rejoice in the inestimable advantage we have over so many millions of living creatures, of knowing him to be the Author of all happiness.

MAY XXIX.

The Harmony and Patriotism among the Bees.

UNION and patriotism form undoubtedly the fundamental happiness which may, in some measure, be ascribed to bees. It is at least certain that their republic would soon be destroyed, if they did not live in great harmony amongst themselves. Those who have made observations on this subject, inform us, that when the bees return to their hives, loaded with materials for building, they find some of their companions ready to relieve them from their burdens. The travellers begin their journeys again: and while they are gathering more provision, the working bees, who

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remain in the hive, knead together the little the others had brought; and thus prepare a mass proper for building. Some, who are not directly employed in work, are busy in doing good offices to those that are; and bring them food, in order to let the work go on without their losing by it. This harmony nearly approaches to the patriotism observable amongst men. The riches of a nation are the riches of each citizen; and this numerous republic forms but one family. Here there is no self-interest, no avarice, and consequently no rapine. Here the bees never assemble together to use violence, and fight battles with their country people. Here we never see one bee avariciously wishing for more than is necessary, whilst another is in want: neither do they ever try to get more honey, when they have laid in a sufficient provision for the winter.

Insignificant as we reckon these insects, we may learn from them virtues on which depend the repose and happiness of our lives! In whatever rank or condition we are, it is necessary to act in concert with our fellow-creatures as patriots. The society in which we live, Christianity, and our own happiness, require it. Let each of us cheerfully bear our part in the general burden; and, if it is necessary, let us even take upon us the burdens of others, when, through ignorance or weakness, any may be deficient. And if it should so happen, that religion, duty, and conscience, require us to make great sacrifices to our fellow-creatures, let us take care not to consider it as an evil, but let us rather think it an honour to be able to succeed better than they. Let no visible selfishness ever find room in our hearts. Those who seek to enrich themselves at the expense of others are contemptible members of society. When we can in any ways contribute to the general good, let us not be deterred from it by the fear of having no reward: is not the testimony of a clear conscience

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and the blessings of eternity, sufficient rewards: It is true, however, that among the evils of this life which we form to ourselves, we must reckon this one, that there is no such thing as perfect agreement in sentiments and characters: but, even this ought to make us admire the wisdom of Providence, which, notwithstanding the disunions and disorders of the world, notwithstanding the self-interest which governs mankind, still keeps up society, and makes it flourish. When a pilot knows how to direct his ship, so as to avoid the sand banks against which it may be cast by the waves, it is then that I admire his skill and experience. And when I see, notwithstanding the wickedness of mankind, in the midst of the storms of passion, that wisdom and virtue still preside, I admire the infinite wisdom of him who governs the world.

MAY XXX.

The prodigious Number of Plants on the Earth.

ABOVE twenty thousand different sorts of plants have been already reckoned, and we discover new ones every day. Some have been found out by the help of the microscope, where they were least expected. Mosses and sponges have been classed among vegetables, and have discovered to the virtuosi flowers and seeds before unknown. Free-stone is often covered with dark brown spots, and the same is seen in the best polished glass. This mouldy substance sticks to most bodies, and it is a garden in miniature, a field or forest where plants have their seeds which blossom visibly, notwithstanding their extreme littleness. If we reflect on the quantity of moss which covers even the hardest stones, and the most barren spots; on the quantity of herbs and grass; on the seve-

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ral sorts of flowers; on all the trees and bushes, each of which may be considered as an assemblage of a thousand different vegetables; if we add to these the aquatic plants, as slight and delicate as a hair, and most of which are still unknown to us, we may in some measure form to ourselves some idea of the multitude of plants upon our globe. It is more wonderful how all these different sorts of plants are preserved, without destroying one another. In order to prevent this, the sovereign Disposer of all things has appointed to each species of vegetables a place analogous to its peculiar quality. He has distributed them upon the surface of the earth, with so much wisdom and propriety, that no part of it is destitute, nor do they grow in too much abundance any where. This is the reason that some plants require growing in an open field, and not in the shade, where they would at least grow languid and weak. Others can only subsist in water, where the different qualities of the fluid matter occasion great variety. Some plants grow in sand, others in marshy and muddy places. Certain vegetables spring above the surface of the earth, others unfold themselves within its bosom. The different strata of which the soil is composed, sand, clay, chalk, &c. have each their particular vegetables; and from thence it is, that, in the immense garden of nature, there is no place absolutely barren. From the smallest dust to the hardest rock, from the torrid to the frigid zone, every soil, every climate, has its peculiar plants. Another circumstance is well worthy our admiration; the Creator's having so ordained, that, among this great number of plants, those used for food or medicine increase much more abundantly than those of less use.

Herbs, both in species and individuals, are much more numerous than bushes and trees. There is more herbage than oaks, more cherry-

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trees than apricots, more vines than rose-trees. It is evident that the Creator designed this for the general good. To be convinced of this, let us suppose the contrary had been the case: if there were more oaks than pasture, more trees than herbs and roots, how difficult would it be for animals to subsist, and how many charms would the earth be deprived of!

All-wise, almighty, and most merciful Being! in this also does thy wondrous providence appear. It requires no effort of the mind to comprehend that Thou art great and good; we need only contemplate Thee in the immense world of plants.

MAY XXXI.

Plurality of Worlds.

IT is not through ignorance alone, it is more through self-love and pride, that we call nothing the world but one of the least parts of the universe; persuading ourselves that our globe alone is peopled; that the sun was made merely to communicate its light and heat to us; and that the moon and stars are of no other use but to light our nights, and shew the traveller his way. The contemplation of the fixed stars is sufficient to contradict this ridiculous opinion. Their twinkling proves that they shine with their own light: and their being visible to us, at the immense distance they are from us, proves that they are much larger than the sun. Is it then probable that these celestial bodies, which are not luminous specks, but great suns; these numberless bodies placed so far from our globe, that they should not be created for better purposes? If the purpose of them were only to serve as nocturnal lights to us, they would be of no use the greatest part of the year. The frequent cloudy skies, and the nights that are

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light from other causes, would make them useless. Those stars also which the naked eye cannot discover, from their great distance, would be absolutely of no use; and the purpose ascribed to them would be better supplied by one single star nearer to us, than by so many millions at that distance. As the same reasoning may be applied to all the uses the stars are to us, either in navigation or any thing else, it must be allowed that we could not possibly account for the design of those numerous suns, if no creature except those of our own globe profited by their light and heat. This conclusion appears still more natural, if we reflect more attentively on our solar system. We have already observed, that the moon in many things resembles this earth; that there, as well as here, land and sea, mountains and valleys, islands and gulphs, are to be seen. Such affinities as these authorise us to admit others, and to suppose also in the moon, minerals, plants, animals, and rational creatures. The analogy between the moon and the rest of the planets leads us to form the same conjectures of them. And as each star has, to all appearance, like our sun, its particular planets, and as these undoubtedly resemble ours, we in a manner behold around us an innumerable multitude of worlds, each of which has its peculiar laws, arrangement, productions, and inhabitants. How numerous are the works of God! How glorious the starry sky! How great our Creator! Millions of worlds declare his glory, and the intelligent beings they contain acknowledge and adore their Maker. How forcibly does this incline us to join with the heavenly choir, in singing the praise of the Most High, that it may resound over all the universe! How happy the prospect that opens to us of that future state, wherein we shall be acquainted with these worlds, and able to comprehend the wonders of them! How great will be our astonishment in

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discovering objects quite new to us, or at least very imperfectly known! In what splendour will the divine perfections appear, the power of which extends over a multitude of worlds, while we falsely imagine it reaches only to the little globe we inhabit! What an inexhaustible fund of varied knowledge! What endless subjects for glorifying the Creator and Ruler of all these worlds!

JUNE I.

Difference between the Works of Nature and those of Art.

WHEN we compare the works of nature with those of art, we find that the former has great superiority over the latter. The consideration alone, that the productions of art are only imitations of nature, is enough to prove this truth beyond a doubt. What artist is there that does not wish to come as near to nature as possible! He is not able to invent, and all he does must have been taught him by nature. How rich, and what variety is there in it! and, on the contrary, how poor and dull is art! In the vast kingdom of nature we find an inexhaustible treasure; and any one of its parts, a stone, a plant, an animal, affords us so many objects worthy of admiration, that, in examining them with the utmost exactness, even to the smallest particle, we cannot discover the slightest imperfection in them. The works of art, on the contrary, are soon exhausted: If they are searched to the bottom, and strictly examined, one soon loses the admiration they at first excited, and discover faults and imperfections not thought of before. What are the most perfect statues in comparison of a single animal, an insect, a worm? Nature is able, of herself, to produce the greatest master-pieces; whereas art

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borrows from it all that it has of the beautiful. It has nothing of its own; and nature has the first right over every thing. Let us add to this, how much less durable the works of art are than those of nature! When the former have been long destroyed, the others still subsist in all their primitive beauty. How superior is the interior construction of the production of nature to all the works of men! Compare, for example, the most ingenious machine to the mechanism of animals, and you will be struck with admiration at the sight of the miracles of nature, whilst the masterpieces of art will appear a mere bauble. Let us only consider ourselves with attention. The perfect and regular construction of our muscles and arteries; the wonderful circulation of the blood in our veins; the variety and number of movements in our limbs; what proofs of the magnificence of God's works! and how poor and trifling, in comparison, are the productions of man! It would be easy to pursue these remarks, if what has been said was not more than sufficient to teach us the just value of the works of nature. It is true, that self-love carries us so far, that we are but too apt to prefer our own works to all others; and our taste is so depraved, that we look on every thing with disdain and indifference, in which the industry of man has no share. Both these prove our ignorance and ingratitude. Can we be so unjust, as to set less value on a watch, admirably finished by a great artist, than on a ball of snow, made up by a child? In thus robbing the ingenious workman of the honour due to him, should we not prove at the same time our ignorance and folly? That is exactly our case, when we do not properly distinguish between the works of nature and those of art. It is true, that we ought not to despise the productions of art, for they also have their value; but, on the other hand, it would be absurd to consider, them as equal, and still more

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so, to prefer them, to the works of nature. God made his works so perfect, that through them we might acknowledge his power, wisdom, and goodness. Let us fulfil this great duty, and never give up the contemplation of nature, nor forget the effect such researches ought to have upon us. Let the study of nature be our delight, because it will teach us more and more to know the Creator and Ruler of the world, and will continually excite in us a desire to arrive one day at a perfect knowledge of his works.

JUNE II.

Leaves of Trees.

THE leaves of trees form one of the great beauties of nature. Our impatience to see them bud in spring, and our joy when they at last appear, prove sufficiently that they are the ornaments of our gardens, fields, and woods. How great the pleasure we enjoy in the hot summer days from the refreshing coolness of their delightful shade. Yet, after all, this is certainly the least of the advantages which accrue to us from the foliage of trees: We need only consider the wonderful construction of leaves, to be convinced that they were designed for much more important purposes. Each leaf has certain vessels, which, being pressed close at the end, or in the stalk, extend themselves like ribs within the leaf, and branch out in a thousand ways. There are no leaves without extreme fine vessels, and an astonishing number of pores. For example, it has been observed, that in a sort of box-tree, called palma cereris, there are above an hundred and seventy-two thousand pores on one single side of the leaf. In the open air, the leaves turn their upper side towards the sky, and the under towards the earth, or towards the inside of the

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plant. To what purpose would this particular arrangement of the leaves be, if they were of no other use but to adorn trees, and to procure us shade? Most certainly the Creator had something much more important in view. The nourishment of plants proceeds directly from the leaves: their pores serve to suck in the moisture or the juices of the atmosphere, and to communicate them afterwards to the whole plant. What wisdom is there in this organization! By these means the plants in dry weather run no risk of wanting nourishment. They receive abundance of refreshing dew, which, falling from the upper leaves, waters those under them, and thus none of this nourishing juice is lost. And as plants perspire greatly, as many experiments shew us, the leaves appear to be the principal organs of this important perspiration. They serve also to introduce into the plant the air it requires. They appear even to contribute to the preservation of the bud which is to shoot the following year: for the eye of the bud is already under the leaf: Undoubtedly it is guarded and preserved by them, at the same time that the quantity of juice, where the leaf joins to the plant, also serves to preserve it. This is the reason that many trees wither and die when their leaves are gathered. It sometimes happens to the mulberry tree, when it is stripped without proper caution to feed silk-worms. This is also the reason that grapes do not ripen, when the vine loses its leaves in summer. Another remark may be made on this subject, which very much opens to us the manner of the plant's growth: The under side of the leaves, always turned towards the ground, is generally of a paler and less bright colour; it is more rough and spongy than the upper side. Here, again, we discover the wisest purposes: The side of the leaf next the ground is rougher, and consequently more full of pores, in order to suck in so much the better what dew

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rises from the earth, and to distribute it afterwards over the rest of the plant in more abundance. The leaves then turn on the side that can best receive the nutritive moisture: and this is the reason that the leaves of some plants incline very low down. If we observe trees growing on a steep hill, we shall see that their leaves do not take a horizontal direction, but evidently a perpendicular one; which proves that the leaves draw towards the side where there is most moisture. These reflections may make us consider the leaves of the trees hereafter, in a different light from what we have hitherto done. If we did not know the inimitable art of their construction, nor the important purpose of their existence, it would not be wonderful that we should see them with neglect and indifference. But when we know that each leaf is an effect of the Divine Power, and an organ of fruitfulness, it would be unpardonable to see them with inattention. They ought naturally to lead us to the following useful reflections: Every thing, even the very smallest object in nature, has been planned with wisdom by the Creator. There is not a single leaf that is a mere ornament, and of no use. It contributes its share towards the fertility and support of the vegetable kingdom. If each leaf then is a work of Divine Power, what a multitude of wonders does not a single tree present to us? The faculties of our minds cannot reach to the bottom of one only, and the smallest leaf might afford subject for reflection all our lives.

JUNE III.

The Reviving Power of the Sun.

I MYSELF feel this beneficent power. As soon as the sun rises over my head, it fills my soul with serenity and joy. Its splendour and warmth inspire

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me with spirit and activity, sufficient to fulfil the duties of life, and to enjoy society. The involuntary indolence and lowness, which made me inactive in winter, are by degrees vanished. I breathe more freely, and I employ myself with more pleasure. How can it be otherwise, when I am witness to the universal joy which the sun communicates to the world, and every where perceive its enlivening powers? It animates and revives all creatures with its benign influence. Millions of shining insects awake, sport, and bask in its rays. The birds salute it with their melody. Every thing that breathes rejoices in it, and we every where trace its happy effects. It causes the sap to rise and circulate through trees, plants, and vegetables. It causes the leaves and blossoms to shoot. It forms the fruit, then ripens it, and gives it colour. It sheds life and light throughout all nature. It is the source of that warmth, without which every animal would languish and die. The effect of the sun is not only felt on the surface of our globe, but even in caves under ground, where it produces metals, and also animates living creatures. It penetrates into the highest mountains, though they are composed of rocks and stones. It extends even to the bottom of the ocean, where it acts in several ways. When we reflect on these useful effects of the sun, it is natural to think of the miserable condition we should be in, if we were deprived of the light and heat of that celestial body. Without it, what would our globe be, but a lifeless mass, without order or beauty? the trees could not produce leaves, nor the plants flowers; the fields would be without verdure, and the country without harvest; all nature would have a gloomy, melancholy appearance.

The sun, with its reviving power, is the emblem of a truly charitable Christian. He also spreads joy and blessings around him. By him the oppressed heart is raised and strengthened, the

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afflicted are comforted, the ignorant are enlightened, and the poor relieved. Oh! let us hereafter resemble this beneficent and charitable man. Let us, according to our different stations, share with our fellow-creatures the goods which Providence has bestowed upon us. Without partiality or prejudice, let us hold out assistance to all who want it. Let us instruct one, comfort another, feed this one, relieve that one. Thus shall we quit this world regretted and beloved, and our memories be blessed by our fellow-creatures.

JUNE IV.

The Desires of the Soul are infinite.

LET us employ some moments in reflecting on ourselves. The soul has certainly the first claim to our attention. It touches us nearly, and ought to be dearer to us than all the pleasing objects which this season so particularly affords. Whatever satisfaction we find in contemplating the corporeal world, it cannot be compared to that which we experience, in reflecting upon the nature and faculties of the soul. The observation of exterior objects, such as the traveller meets on the road, is certainly agreeable to him, because he requires to be amused and refreshed through all his pilgrimage; but that of spiritual objects leads directly to the blessed immortality we may expect as citizens of the world to come. Let us therefore sometimes reflect on the desires implanted in our souls by the Creator. Experience proves that our thirst of knowledge can never be fully gratified. We have no sooner made one discovery than we aim at another. Our desires are never satisfied; and when we at last obtain what we had most ardently wished for, we begin again to form new desires. That of acquiring more and more blessings se-

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companies us through life, and even in the moment of quitting the world. What conclusion can be drawn from this, but that, as our desires continually extend beyond the present, without being ever fully gratified, there must be blessings after death, beyond the limits of this life? We are not then designed for this transient life alone, but for an everlasting one. Is it probable, indeed, that man would be the only creature on earth endowed with faculties, without having, at the same time, the destiny for which these faculties were bestowed upon him? That man should have an instinct, without the means of satisfying it, and be in this respect more miserable than brutes? When a beast is hungry or dry, it always finds means to supply its wants. We see the silkworm spin its bag, and shut itself up for its transformation. Would that happen if it was not designed for another state, in which it was to appear again under a new form? We see that birds lay eggs: would that be the case, if these eggs were not to serve for the preservation of their species, or that of other creatures? If our existence, then, was to be confined within the narrow limits of this life, why should we have received inclinations and desires which cannot be gratified, and faculties which we could never use? No, certainly, our heavenly Father has not implanted endless desires in our souls to no purpose, much less to be a torment to us.

Being of beings! Our souls are capable of being filled with thy Spirit; we may love Thee above all things; we may aspire at being like Thee, and united to Thee for ever; we may be raised in this world above all earthly things, and soar even to Thee. Is it then possible that souls such as these should be annihilated? that we should have learned to know Thee in vain, to love Thee, and to aspire to thy blessed fellowship in vain? For we are far from enjoying it here: we know Thee

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but in part: our love is yet faint and weak; and we but imperfectly enjoy thy grace. Undoubtedly, whatever we possess on earth are but pledges and fore runners of the infinite felicity which awaits us hereafter. This explains, this reconciles every thing; and we may clearly see in this our future destiny. We see it is not in vain that we wish continually to increase in wisdom and virtue, and to draw nearer unto God, the source, the origin, and model of all perfection. We see that the happiness we cannot enjoy here, or at least but for a short time, we shall possess to all eternity in a future state. We may now assure ourselves, that the delightful hours in which the love of God has filled our hearts, and in which we have had a fore-taste of heavenly joys, are not fruitless, or to no end. If we aim at perfection, we shall obtain it. No propensity, no desire, no faculty of the soul, was given in vain. They will all be fully gratified and employed in a blessed eternity. Let us therefore rejoice in the immortality of our souls; God himself has given us the sense of eternity.——Let us not then dwell on visible, but on invisible things. In the midst of all the pleasures we here enjoy, of all our flattering hopes, and the good we possess, let us aspire to those pleasures, those hopes, those unspeakable blessings, which are reserved for us in a better state. Let us employ the noble faculties of the soul in raising us to heaven, for which purpose they were properly designed. Let us preserve our souls, which were created and redeemed for immortality, from the seduction of the senses, that they may not be absorbed in trifling pleasures unworthy of them.

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JUNE V.

The Use of Rivers.

WHEN we calculate the space which the rivers take up in our globe, we find they deprive us of great part of the continent. Some are discontented at this, and fancy it would be better to have had less of rivers, and more of land. But if they would only consider with what wisdom, and in what due proportion, the Creator has planned every thing upon our globe, they would conclude, that rivers have not been spread over the earth without good reason and essential use to men and other creatures. It must be observed, in the first place, that the water of rivers affords a very wholesome drink to man. Spring or pump water, when it has been long without motion, under the ground, loosens, and insensibly carries away with it some particles which may be hurtful; but river water, which is continually evaporating, and always in motion, is purified from all dirt, and, by this means, becomes the most salubrious drink for men or beasts. However, the use of rivers extends still farther. Is it not to them we owe the neatness, the wholesomeness, and comfort of our houses, as well as the fertility of our fields? Our habitations are always unhealthy, when they are surrounded by stagnant water, and by marshes, or when the want of water occasions a hurtful drought. The smallest rivulet cools the air around it, and makes it extremely agreeable. It is the same in respect to the fertility of the land; it is generally owing to the neighbourhood of rivers. What astonishing difference between a country watered with rivulets, and one to which nature has denied this assistance? One is a barren dry de-

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sert; the other, on the contrary, is in some sort a garden of delights, where woods and valleys, meadows and fields, present a thousand beauties, and the most pleasing variety. A river, winding through it, makes all the difference between the two countries: it every where conveys health, prosperity, and plenty. It not only waters the country, in moistening the roots of plants, but it also makes the earth fruitful by its constant evaporations and inundations. Who can be so inattentive, or rather so ungrateful, as not to acknowledge how useful rivers are to whole countries and provinces, when we daily draw such numberless advantages from them? How could commerce be so conveniently carried on, if we could not, by means of rivers, obtain from the most distant nations, the merchandise and goods we require? How many machines and mills should we be deprived of, if they were not put in motion by rivers? How many kinds of delicate fish should we want, if rivers did not furnish us with abundance of them? But, say they, if there were no rivers, we should escape those inundations which do sometimes so much mischief. I allow, that when rivers overflow their banks, they may make great havock and devastation in flat countries. But, is this inconvenience sufficient to prevent rivers from being a blessing of Providence? Do not the numberless advantages which accrue from them, much exceed the harm they sometimes do? Inundations seldom happen, and they extend over very little country. Besides, whatever destruction they occasion by overflowing lands, there still results much good from them. For the very inundations manure, and enrich the ground; and, to an attentive observer, they are a proof, that God blesses with one hand, while he appears to chastise with the other. Thus, then, the rivers ought to convince us of that divine goodness which is over all the earth. We

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see that all parts of nature, and all the elements, combine to make us happy, and to procure us a thousand conveniencies. If only one of the blessings of God failed us, its privation would destroy much of our happiness. If there were no rivers, there would be no fertility, and the earth would be but a barren heap of sand. What shoals, what innumerable multitudes of creatures, who can neither live in the air nor on land, would suddenly perish, if the Almighty Hand, which created rivers, was to dry them up!

JUNE VI.

The Variety of Flowers.

WE cannot be but struck with astonishment, when we consider the prodigious number of flowers which are produced in spring, summer, and autumn. But the variety among this numerous host is perhaps still more surprising. Certainly nothing but a Divine Power could cause such numbers to grow; while this Power must have been united with Wisdom equally great, to produce such infinite variety. If they had all been perfectly alike, the sameness would have fatigued the senses; and if summer produced no fruit or flowers, but such as spring affords, they would give us no pleasure, and we should soon tire of the cultivation they require. It is consequently an effect of divine goodness, to have varied the vegetable productions so agreeably; and to have added that charm to their other perfections.—This variety does not only extend to whole tribes of plants, but to the individuals also: the carnation differs from the rose, the rose from the tulip, the tulip from the auricula, and the auricula from the lily. But each carnation, rose, &c. has also its own particular beauty and cha-

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racter. Each has something peculiar to itself. There are not two flowers of the same species perfectly alike in form and shades. Take a view of a bed of flowers in a parterre: there you may behold some of a great height, that seem to soar above the rest; some of a middling rank, some that bear their stately heads above the height of man, others that creep upon the ground; some that dazzle with their rich colours, others that are simple, and make no show; some perfume the air with exquisite odours, whilst others only please the sight with their beautiful colours —— The flowers no less vary with respect to their seasons: in spring, when men leave the cities in order to go and view the productions which a bountiful Creator grants for their subsistence, they then see the blossoms in full bloom and beauty. Towards summer a thousand and a thousand flowers present themselves to the sight, and form a beautiful scene. They succeed one another regularly, and in the order designed. When winter at last arrives, it brings other plants with it; which, though they may not please the eye, have their use nevertheless. And if we go through the race of vegetables, we shall still find more and more varieties of them. What a difference! How many degrees between the grass which grows amongst the stones, and that useful plant, to which we are indebted for the most wholesome food, and that which we can the least dispense with! Amongst the creeping winding plants, what difference between the weak ivy and the vine, whose grapes afford us such delicious drink! Amongst the trees, what a difference between the wild plum-tree and the oak!

Lord God! with what wisdom hast thou planned all thy works! This is the most natural conclusion to be drawn from these reflections. With what wisdom the whole plan of the vegetable kingdom is formed, and how perfectly executed!

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In all his works the useful and the agreeable are joined. For, is it not to procure us pleasures, equally varied and inexhaustible, that there is such astonishing variety amongst the plants? There is not a month of the year that is not marked with his blessings. Each of them affords new pleasures to our senses, and new proofs to our hearts of his tender mercies.

JUNE VII.

The Use of Venomous Plants and Animals.

EVERY thing on earth, considered separately, is good and wholesome; and, if any thing becomes hurtful, it is because we make a bad use of it, instead of that for which it was designed. From thence it is, that a sort of good, which preserves the life of one animal, destroys another; and that a plant, which, in some cases, is considered as poisonous, is, on other occasions, very useful and salutary. Thus, for example, hemlock was formerly supposed deadly poison, and now a number of experiments assure us, it makes admirable cures. The multitude and variety of vegetables which grow upon the earth is prodigious; but we must not imagine they were all created for the use of man. Some plants are designed for beasts, others furnish us with dress and ornaments; some please our taste and smell, and a great number of them are medicinal, and would be of great use in many maladies which men and animals are subject to, if they did not mix bad ingredients with them. The same thing may be said of many living creatures, which, though very dangerous to us, are very useful to other animals, either as food or medicine. Most birds make their chief food of insects, commonly thought hurtful. Domestic birds eagerly swallow spiders. Peacocks and swans de-

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light in all sorts of snakes. If we also consider how many excellent medicines are composed of the most poisonous herbs, nothing can be more easy than to justify the wisdom and goodness of God in forming creatures useful to us in so many ways. The following reflections will more and more convince us of it. The number of noxious plants and animals is nothing in comparison of the multitude of those that are of the greatest use to us. The Creator has also implanted a natural instinct in men and animals, which gives them an aversion for whatever is hurtful to them. The mischievous beasts have a certain fear of man, and scarce ever make use of their offensive arms, unless they are attacked or provoked. Besides, the most noxious animals have evident marks and characters, by which their dangerous properties are easily known; that, by being warned, we may avoid, or prevent the danger. The rattle-snake, which is the most venomous of all snakes, gives warning of its approach by the clattering of the rings in its tail.—The crocodile is so heavy in its motions, and turns with such difficulty, that it is very easy to escape from it. Divine Goodness has even so wisely disposed things, that the most dangerous and venomous animals furnish the remedy with the poison. Thus the scorpion oil is an infallible remedy for its sting. A bee bruised, rubbed, and put on the wound, cures the evil it did. The fat of vipers is also an excellent remedy against their bite. It might be said, perhaps, that it would be better if there was no plant or animal that could hurt other creatures. But this would only prove our ignorance and self-love. If God has ordained, that one creature should hurt another, it is for very wise purposes; and from this plan, there accrues to us many very great advantages. Several creatures which appear hurtful, are not really so, at least, in certain respects. Their poison, and even the organs they make use of to wound others, are

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absolutely necessary to them. One example may serve for all the rest: the bee often gives pain with its sting, but if it is taken from it, the bee can never be of any use afterwards. It is the same throughout all nature. Every thing that appears hurtful, is, in reality, indispensibly necessary.—Wherefore, then, has man the presumption to decide what is hurtful or useful in nature? Who can say it is contrary to the wisdom of God that we should sometimes feel pain? Do not the most disagreeable things often procure us the greatest advantage? In general, it is certain that natural things are only hurtful by accident; and if we receive harm from them, we may always blame our own imprudence.

JUNE VIII.

The Perfume of Flowers.

A THOUSAND pleasing and cheerful objects surround me on all sides. Every thing I see, every thing I hear, all the sensations which smell or taste can give, all contribute to my enjoyment or happiness. Every thing in nature, at this beautiful season, seems combined to fill my mind with the sweetest and purest delights, and to lead my heart towards God. Every object that excites my admiration, inclines me to look up to him as the source and giver of all that we enjoy. Each flower is a proof of his power, a mark of his existence, and a hymn to his praise. I will, at present, confine myself to the pleasure I receive from the variety of sweet perfumes which the flowers afford. It would have pleased the eye alone with the wonderful variety in the vegetable kingdom, but he has graciously added, to the other charms of flowers, that of sweet perfumes; and there is as much variety in their smell as in the flowers themselves.

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Though we cannot exactly determine in what the difference consists, we perceive it sensibly in going from one flower to another. It is also remarkable that the smell is neither strong enough to hurt the head, nor weak enough to lose its pleasing effect. The particles which the flowers exhale are so light and fine, that they disperse to a distance, and thus are not troublesome. A grain of amber can fill a whole room twenty feet square and fifteen high, with its perfume. The smell of the rosemary, that grows in Provence, reaches twenty miles beyond sea.

But how is it that the vapours which exhale from plants so easily reach the organs of smell? It must be attributed to the construction of the nose. It is composed of two cavities, separated by a partition. They unite by degrees, and end in one only, which reaches to the bottom of the throat, where there is a communication with the mouth. All this cavity is lined with a membrane, which is one continued series of nerves. These come from the brain, through a bone pierced full of holes, which, on this account, is called the sieve-like bone. The smelling channel being wide at the bottom, and growing gradually more narrow towards the top, occasions the smelling corpuscles to accumulate in the upper part, when we breathe the air through the nose; and, of course, must affect those nerves the more. By these means we receive the impression of even the least smell. Let us also observe, that Divine Wisdom has formed bony plates, which stop the upper part of the nose, and which have a twofold use. They prevent any thing hurtful from entering into the breathing passage during sleep, or when we are unable to guard it otherwise.—They receive and support the branchings of the olfactory nerves, a great number of whose little branches and threads are dispersed in these bones; and, by that means, these nerves meet every where

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the odoriferous corpuscles which strike them when they enter the nose with the air.

It is therefore very just, O Lord! that we should bless and give Thee thanks for those wise plans. For, that the smell is a real blessing, we must particularly be sensible of at this season.

JUNE IX.

The Multitude of Animals.

THE naturalists, who have calculated the number of animals on our globe, have discovered about 400,000 species. However prodigious this number may appear, it is by no means exaggerated. There is reason to suppose, that, in the known parts of the earth, there are more than 450 kinds of land animals, 600 of birds, more than 2000 of finny fish, more than 3000 of shell fish, more than 20,000 different sorts of insects, visible to the naked eye. In this number, the insects, which belong to different sorts of animals are not comprised, and which, at least, amount to 100,000 species. There is also an infinity of insects still unknown to us; we may presume above 200,000 sorts. And what shall we say to the innumerable multitude of insects which feed on plants only? 18,000 species of plants have been reckoned. In giving, then, but four species of insects to each, we find that this amounts to 72,000. Such a number of animals living on our globe, certainly appears prodigious; but it will not be found too much, if we believe, with some naturalists, that every part of the immense kingdom of nature is animated, and filled with live creatures. Very skilful physcians maintain, that the disorders which are attended with blotches and pimples, and even certain fevers, are occasioned by worms. It is also very probable,

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that the atmosphere is sometimes peopled with animals, although their extreme minuteness prevents them from being visible. Who knows whether that sort of trembling motion seen in the air during summer, may not be produced by millions of insects swarming in the atmosphere? Let us take the first flower that falls in the way, for example, a daisy, or a rose, and we shall find there a multitude of insects. Is there the smallest spot in nature where living animals are not to be found?—Nature has even produced animals in other animals, and made one animal to be as a world for other creatures to subsist in. The air, the juices of animals and plants, corrupted matter, excrements, smoke, dry wood, and even the hardest stones, in some measure, feed and serve to lodge living creatures. The sea seems an element made up of animals. That light observed upon it in summer nights, is owing to innumerable little shining worms, whose parts, when divided from the body and corrupted, still shine, as the worm itself did, when alive. Whole swarms of animalculæ, which the eye cannot reckon, flutter and sport in the rays of the sun. All these innumerable animals of our little globe are infinitely diversified in their form, their organs, their faculties and motions. Undertake, O man! to name all these animals, to express by numbers the individuals of one single species; to calculate how many flies, worms, birds, &c. there are! How could you do it? Their number is unknown; and if it were not so, it would be impossible to express it by cyphers. Here we have a fine subject for admiration, in reflecting on the infinite power of our Creator. He alone produced, he alone preserves and supports this immense multitude of creatures. Consider how much food such a number of animals require. If they only lived at each others expense, if they destroyed one another, nature would present us with nothing but a frightful scene of murder and slaughter. But

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happily there are not many carnivorous animals; and they are very useful in devouring carcases, and by that means guarding us from infection, as well as in preserving a certain balance, by preventing any species from multiplying too fast. Besides this, the Creator has properly designed the vegetable kingdom for the food of animals; and he has assigned, to almost each species of beasts, a particular kind of plant. In order that all sorts of animals should have food in proportion to their number, he has ordained that they should live in different countries of the earth. How exactly has he even measured the ground! One single tree is larger than thousands of plants; yet it fills up no more space on the surface of the earth, than a few feet square, and a multitude of quadrupeds, birds, and insects, find their food there, and lodge in it. What care also has the Creator shewn, in surrounding all animals with a fluid matter adapted to their different natures. Two sorts of seas are destined for them; one of water, and one of air. All living creatures are in one or other of these two elements, except the small number which can live in either. The bottom of these two seas is the habitation of a part of those animals; such as are in the upper sea, the reptiles, and most of the quadrupeds; and, in the lower sea, the zoophites, the shell-fish, corals, oysters, &c. Others have the power of rising and descending as they please in their element, as the birds and insects do in the air, and as the whales and most other fish do in the water.

And the Atheist dares to say in his heart, that there is no God! Senseless man; "Go and ask the beasts, and they shall teach thee; and the fowls of the air, and they shall tell thee; or speak to the earth, and it shall teach thee, and the fishes of the sea shall declare unto thee. Who knoweth not in all these, that the hand of the Lord hath wrought this?"

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JUNE X.

Immensity of the Firmament.

COME, O man, and contemplate the firmament; behold that multitude of lights which shine and illumine your nights. Try to count them; but thy weak sight is unable to do it; and thine eyes are lost in the numberless stars. Well, then, take thy telescope, and double thy sight. What dost thou now see? To the first million new millions of worlds are added. Continue these observations, and undertake to count the stars thou hast discovered. Thy ideas are confounded. Thou seest that it is beyond the power of numbers to express such immense multitudes. It is true, that, for many ages past, mankind have tried to find out the number of the stars; but the discoveries made in the heavens since the invention of telescopes, plainly prove that no man can ascertain the number of celestial bodies. One of the most ancient astronomers reckoned but one thousand and twenty-six; the catalogue was afterwards increased to one thousand and eighty-eight stars. But the observations made since, by the assistance of telescopes, have convinced mankind that the human sight cannot discover all the celestial bodies. Our instruments have informed us, that the long, white, and luminous tract, which fills a large space of the sky, called the Milky Way, is composed of a multitude of stars. We know even that, in places where we saw with the naked eye, only a single star, the telescopes have since discovered many more to us. By their means, we distinguish in two constellations alone, twice as many stars as we reckoned in the whole sky. How much has this of course enlarged our ideas in respect to the greatness of the universe! But if the discoveries

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already made have so increased our admiration of the immensity of the Divine Power, it will rise still higher, when we reflect how vast these bodies must be, which, notwithstanding their prodigious distance from us, are many of them visible to the naked sight. Exact calculations, which may be depended on, inform us that a cannon-ball would take more than seven hundred thousand years to reach from thence to the nearest of the fixed stars; and yet the greatest astronomers agree that these numbers are not sufficient to express even the apparent distance of a fixed star. Some of these globes appear to us to be the largest, because they are the nearest to us: they are, on that account, called stars of the first magnitude. Those nearest to them are called stars of the second magnitude, because being much farther from us they appear smaller. They must be at as great a distance from the former, as the latter are from us. Those of the third magnitude must be three; those of the fourth, four times farther from us than the first, &c. Supposing there were but twenty of these, it would follow, that the diameter of the whole universe, if there were only twenty classes of stars, would be so great that a cannon ball could not go through it in twenty-four millions of years.

King of heaven! Sovereign Ruler of the stars! Father of spirits and of men! O that my ideas were vast and sublime as the expanse of the heavens, that I might worthily meditate upon thy greatness! That I might raise them even to these innumerable worlds, where Thou displayest thy magnificence still more than on this earthly globe! That as I now pass from flower to flower, I might go from star to star, till I arrived at the august sanctuary where Thou sittest on the throne of thy glory! But my desires are vain as long as I am a sojourner upon earth. I shall not know the wonders of the celestial globes, till my soul is delivered from the incumbrance of this gross body. In

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the mean time, as long as I live in this world, I will raise my voice, and sing thy praise.

JUNE XI.

Singularities in the Vegetable Kingdom.

THE variety of animals is so great, that it appears at first difficult to find connection between them and plants. Some beasts live only in water; others only on land, or in the air; some which can live in either or both equally. But it may be said literally, that it is the same in respect to vegetables. There are plants which only live in the ground; others that only grow in water; others that can bear no moisture; others, still, which live equally in land or water: there are even some that live in the air. There is in the island of Japan a tree, which, contrary to the nature of all other plants which require moisture, cannot bear it. As soon as it is wet it withers, and the only way to save it from dying, is to cut it down to the root, to dry it in the sun, and afterwards plant it in a dry and sandy soil. It is known that a sort of mushroom, moss, and other little plants, swim in the air: but a more extraordinary thing is, that a sprig of rosemary, which was put into the hand of a dead person (according to the custom of some countries), took root so well to the right and to the left, that at the end of some years, when the grave was opened, it had covered all the face of the corpse with its leaves. The vegetation of the truffle is still more singular. This extraordinary tubercle has neither roots, nor stalk, nor leaves, nor blossom, nor even any visible seed: it draws its sustenance through the pores of its bark. But how it is produced, or why, in general, there should be no other herb where those sorts of mushrooms grow,

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and the earth be light and full of crevices, has not yet been accounted for. There is no plant which can better be compared to the land and water animals, than that sort of membraneous moss called *nostoch*. It is an irregular body, a little transparent, and of a pale green colour. It trembles when touched, and is easily broken. It can only be seen after it has rained; it is then found in several places, but chiefly in uncultivated ground, and along the sides of sandy roads. It is formed also in a moment; for when in summer, walking in a garden, not the least trace of it is seen; on a sudden a storm of rain falls, and in an hour after, in the same spot, the whole walk will appear covered with a great quantity of it. For a long time it was supposed that the *nostoch* fell from the sky; but it is now known to be nothing but a leaf, which draws the water greatly, and sucks it in. This leaf, to which no root has been discovered, is in its natural state, when it is well impregnated with water; but heat, or a high wind, makes the water evaporate in a few hours, and then the leaf contracts, shrinks, and loses its transparency and colour. From this circumstance it appears to grow so suddenly, and to be created in a wonderful manner with the rain; as a fresh shower falling on it, when it is withered and invisible, revives and makes it again appear. But there are still more singularities worth observation among the vegetables. The whole atmosphere is filled with millions of invisible plants and seeds. Even seeds of a larger sort are scattered by the wind all over the earth; and as soon as the air has carried them to the places where they can thrive, they become plants; and it requires so little for that purpose, that it is difficult to conceive whence they can draw what is necessary for their growth. There are considerable plants, and even trees, that take root and grow in crevices of rocks, without the least earth. Vegetation is

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sometimes formed inconceivably quick: for example, mushrooms, and water-cresses, if the seed of them is put into wet linen, become a salad in twenty-four hours. There are plants which appear to have scarce any life, and yet they continue to exist. We often see willow not only hollow and decayed within, but the outer bark so hurt, that there scarce remains an eighth part of it. These trunks, however, poor as they are, break out again every spring, and shoot into numberless branches and leaves. How wonderful is it, that the nutritive juice of plants is not only supplied by means of the root, but by the leaves also, which draw it from the air, and, in some degree, pump it in; and that there should be plants, the branches of which become roots, and the roots branches, according as they are turned in planting them! The great age also to which trees arrive, how surprising it is! There are apple-trees which must be above a thousand years old; and, if we calculate in the gross the fruit which such a tree produces every year, we cannot but admire the fertility of a pippin, which can singly supply all Europe with trees and fruit of that sort.

But we should never have done, if we were to pursue these reflections as far as they might lead. Every thing is full of wonders. Every thing marks to us a Being of perfection, whose power, wisdom, and unbounded goodness, all join in heaping upon us continual blessings and enjoyments. Ungrateful as we are, shall we not vouchsafe to reflect on the many wonders that continually surround us! Can we refuse to bless our God, who does such great and admirable things! Shall we not sanctify the pleasures which the country and gardens afford us, by contemplating the wonders of the Lord; by reflecting on them; by looking from the creature to the Creator; from the flower to Him who made it.

Lord! How great and magnificent are thy

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works! what wonders present themselves on all sides! I contemplate them with delight: but I am lost in them. They surpass my comprehension, and I cannot fathom them. It is at thy command that the grass shoots its blade; that the groves are clothed with verdure; that the flowers embalm and adorn the fields and gardens with their colours; that the trees grow and raise their heads to the very clouds. The mountain cedar declares thy glory, and proclaims that Thou hast made it. On whatever side I turn, new wonders appear. The country, the vales, and the mountains, the rivers, and the sea, all, from the lowest atom to the highest sphere, is full of the goodness of the Lord!

JUNE XII.

Means of Happiness which we find in Nature.

TO be convinced that, throughout all nature, every thing tends to the benefit of mankind, we need only consider, in the first place, the close connection and relation between all natural things and us. It is true that there are several bodies, the use of which we do not see relatively to man; but we must not conclude from thence, that we draw no advantage from them. Many things, which appeared useless to our ancestors, do not now appear so; and it is to be presumed that our descendents will, in their turn, discover what we are at present ignorant of. Let us acknowledge the Divine Wisdom in this. The real use of many creatures is concealed from us, in order to humble our pride, by making us feel how limited our understandings are, and to exercise our minds, and lead us more and more to the contemplation of God's works. Many things in nature are only indirectly useful to us: several animals serve as

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food for mankind, and consequently, all that serves as sustenance for them is beneficial to us. The small fish are the food of the larger: many birds feed on worms and insects; and there are several species which live entirely on prey. The Divine Wisdom manifests itself again in this circumstance; for if the fields and productions of the earth were to feed all the animals, there would not be enough left for the use of man: and what would then be the fruit of his labour? I allow that there are several animals which might be said to be created only to hurt mankind; for example, venomous creatures. Poison is so hurtful to the human body, that it generally causes a painful death; and it effects are sometimes so quick, that there is scacre time to have recourse to antidotes. It is true that, in this respect, many animals appear in a bad light; but if we consider them on another side, we shall discover traces of God's goodness, and have reason to admire his wisdom. Physicians make use of poison in many excellent medicines. Would mankind have been happier, if there had been no venomous creatures in the world? The poison they have in them had made before a part of those bad vapours which mankind would have breathed, and which would have been prejudicial. In a word, it may be said with certainty, that there is nothing on earth really hurtful to man, unless he make an improper use of it. But if, in creating our globe, God proposed to himself our happiness, should we not be inexcusable to interrupt his salutary designs, by obstructing our own happiness, instead of labouring for it with all our might? God's views are all merciful towards us, but we often render them useless by a conduct which must necessarily make us unhappy. Let us be wiser hereafter, and make a better use of the many means of happiness with which God so abundantly furnishes us. And if it is not possible to satisfy all our wishes in this world, let us

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have recourse to religion, which will amply compensate for any defects in nature, and will explain to us many things which appear obscure.

JUNE XIII.

The Loadstone.

THE loadstone is the most singular of all minerals in its properties. It is a ferruginous stone of a dark grey colour, and has the virtue of attracting iron. This virtue is not equal throughout the whole stone, but resides chiefly in two of its points, called the poles of the loadstone. When this stone is suspended by a string, and unconfined, it constantly points one of its poles to the north, and the other to the south, if first put in motion, and then left to itself. This regular direction, which only varies a little in some particular parts of the earth, has given the name of the northern pole to that which points to the north, and southern to that which points to the south. The two properties of attracting iron, and pointing toward the north, are communicated to iron, by rubbing it against the loadstone. This discovery introduced the magnetic needle, so indispensibly necessary to navigators in long voyages; which proves, that things may become very useful to the world, though at first sight they appear of little importance; and that, in general, the knowledge and study of the magnificent works of the creation is of infinite advantage to the human mind. These virtues in the loadstone prompted the naturalists to examine farther into it, with the hope, not only of finding out the cause of such surprising effects, but of discovering new properties in the stone. They were more fortunate in the latter than in the former. It was observed, that the loadstone

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does not at all times, and in all places, point to the north; but that it sometimes inclines a little to the east, sometimes to the west, sometimes more, and sometimes less. It was observed that its attractive powers were equally strong, though bodies were placed between the iron and the stone which might be supposed to prevent the effect. Glass, fire, water, men, and animals, with every metal, except iron, give free passage to the magnetic effluvia. It was discovered, that, in two loadstones, the two poles of the same name, the two northern and two southern poles, repulsed each other, and seemed to fly one from the other. It was therefore concluded, that the power of attraction might be in the iron as well as in the loadstone, as they seemed to attract each other equally. In order to be convinced of this, one need only hang a loadstone on one end of the beam of a balance, and put an equal weight at the other end, and when the loadstone is balanced, and not in motion, to place a bit of iron under it: The loadstone will be immediately drawn down by the iron, and the other weight will fly up. If their situation is reversed, the loadstone will attract the iron in the same manner.

However singular these things are in the loadstone, there is another circumstance no less worthy of observation; which is, that all the endeavours, and all the sagacity of philosophers, who have taken such pains to discover the cause of these wonderful effects, have been hitherto fruitless. The loadstone is still a mystery to the human understanding. Ought we then to be surprised that, in religion, which is infinitely raised above all that can affect the senses, we should find mysteries we cannot penetrate, and the perfect knowledge of which is reserved for the future state? Is it surprising that some things in religion should be incomprehensible to us, when in natural things, which we see with our eyes, and feel with our

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hands, there are so many objects which oblige the most distinguished men of learning to acknowledge their ignorance, and the weakness of their understanding. There are, however, mad people, rash enough to doubt, and even to deny, whatever they cannot comprehend in religion. If this consequence was right, we might with much more reason say, that the loadstone does not attract iron, or point to the north, and that all is false that is said of it, because we can neither explain nor comprehend it. When natural things are in question, one may say to such sceptics, Come and see. But the mysteries of religion are not seen with the eyes of the body. The mind alone perceives them, and will understand them perfectly when admitted into the kingdom of light. Let us wait for the happy period: and if we find any thing obscure and inexplicable in religion and in nature, let us remember that the imperfect state of our souls and bodies prevent us from searching to the bottom of them. Let us remember that a considerable part of the happiness of the world to come will consist in having a more perfect knowledge of all that can contribute to complete our felicity, and to prove the glorious attributes of the Being of beings.

JUNE XIV.

Cherries.

CHERRIES are a fruit which, from their sweetness, mixed with a pleasing acidity, quench the thirst, allay the fever of the blood in the heat of summer, and prevent the bad humours to which we are but too liable at this season. In the first place, they quench the thirst by their sharpness, which contracts the glands, cools the parched tongue, and moistens the dry palate. This me-

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thod of appeasing the thirst in hot weather, is much to be preferred to all those drinks with which we fill ourselves, and only the more increase our heat and perspiration. But, besides the cherries quenching our thirst in the most pleasing way, they have a cooling quality, which tempers the heat of the blood, calms the animal spirits, of which the too great impetuosity and agitation affect and weaken the nerves. Thus the wholesome juice of the cherries, their acidity, and their astringent virtue, cool us delightfully in the great heats, prevent the blood from being too thin, thicken the fluids and keep them from corrupting.

With what goodness has the Creator provided fruit adapted to every season! In these hot months we require cooling acid fruit, and he furnishes us with abundance of it. He gives it even in such quantities, that the poor may enjoy it as well as the rich. Let us make this comfortable reflection whenever we see a cherry-tree loaded with fruit: How sad would be the fate of the labourer, who is obliged to earn his bread with the sweat of his brow, if, to refresh himself, he must have recourse to the delicious drinks reserved for the great and rich, and could provide himself with no other? Merciful Father! Thou forgettest not the poor: Thou suppliest their wants: Thou vouchsafest to refresh them with fruits within their reach; and the cherries are as wholesome for them as lemonade and wine are for the rich. What wonderful plenty is there of acid cooling fruits at this season! Our gooseberries, cucumbers, stone-fruit, and salads, are so many pleasing preservatives of health.

Let us, therefore, never see or enjoy the fruits that our Creator grants us, without acknowledging and blessing his goodness, or without making these reflections which so naturally present themselves: The heavens, the earth, the elements,

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and every creature combine to make us happy. Wherever we turn our eyes, we are surrounded with the blessings of our heavenly Father. The animals, the corn, the vegetables, and the fruit; in the vale, on the mountain, in the forest, and in the sea, all serve for our sustenance and enjoyment. The beneficent hand of the most High is ever open to us. How great indeed are the blessings which God continually pours upon us! How many occasions have we daily to look up to Him with grateful hearts, and to bless Him evermore! Each time that we walk in the country or garden, each time that we enjoy the beauties and blessings of nature, let us think of Him who is the source of every blessing and enjoyment.

JUNE XV.

The Wisdom observable in the Construction of the Bodies of Animals.

THE formation of the animal body affords the most striking proof of divine wisdom. For, as some animals were to reside chiefly in the air, others on the earth, and others in the water, it was necessary that their construction should be conformable and adapted to their situation and different kinds of life. The wisdom with which God has done this cannot be too much admired. Every thing is so exactly disposed as each animal requires it, that, if their construction had been like any other but their own, they would have suffered by it considerably, and could not have fulfilled their destination. The birds of prey are provided with nails, strong claws, sharp and hooked bills, that they may with the more security and ease catch their prey. Those who are to seek their food in marshy places require a long small bill, and long legs; as it was necessary

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that those which live in the water should have the lower part of the body very large, a long neck, membranes or sort of oars to the feet, with an oiliness in the feathers to make them glide smoothly. The insects that live on prey have mouths shaped like nippers; and those that suck their food are provided with a sting or trunk. Why have the hares or rabbits full-set eyes, but in order to see so much the better to avoid the snares and dangers to which they are exposed? why are the eyes of the mole so sunk and small, but that, living under ground, it does not require much sight, and because, that full eyes would incommode and hinder their burrowing under ground? Why is the chrystalline of the fishes eye so round, but to compensate for the refraction of the rays of light; whereas animals that live in the air have a lenticular chrystalline, or in the form of a flat sphere! Why have animals, whose eyes move, but two, whilst those that cannot move theirs have several? Why have the animals who seek their prey in the dark, larger pupils and more brilliant eyes? Why does the eye of the hen answer the double purpose of telescope and microscope, but that she may seek the very smallest seeds in the earth or gravel, and discover at a distance the birds of prey that might seize upon her chicks? With what amazement must we be struck in considering the apparatus for the organs of animals in respect to their several motions! What a multitude of limbs! what suppleness! What flexibility! Some animals move slow, others quick, some with two feet, others with more, some with both wings and feet, others without either. The slowness or swiftness of motion is always regulated according to the different wants of each animal. Those that are well armed, and have courage, skill, and strength enough to defend themselves against their enemies move more slowly than those that

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are defenceless. Who gave to serpents and other reptiles the power to contract and stretch out their bodies, to roll themselves up, and to dart out afterwards, from one place to another to seize their prey? Who formed the fish in such a manner, that, by means of their bladder, they can rise and fall in the water at will? Who taught the snail to contract its body, and bring water into its little house, when it wishes to fall on the ground? What art appears in the formation of birds, in every part of their bodies, and particularly their wings! How well their body is formed for flight! Small and sharp before, and increasing gradually till it is of a proper bulk. This adapts it for cutting the air, and making itself a passage through that element. The feathers are all arranged with much art, and laid one over another in a regular order to faciliate the motion of the body, and, at the same time, to serve as a covering to defend it from the severity of the cold and bad weather. Though firm and close together, they can spread, rise up, swell, and take up more space, just as the bird requires it. The wings, which are the chief instruments of flight are put in the most proper place to balance the body exactly. What admirable work is there not in every feather! The quill is stiff, and hollow towards the bottom, which makes it both light and strong; the beard of the feather is ranged regularly, broad on one side, and narrow on the other, which is of wonderful use in the progressive motion of birds, as well as in the close and strong texture of the wings. What proportion do we see in the manner of placing the feathers! They are always so placed as to agree exactly with the length and strength of each feather, and the larger serve to support the smaller. In the bony part of the wings, what a multitude of joints, which open, shut, or move, according as it is necessary, either to extend the wings, or

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draw them close to the body! What extraordinary strength in the breast-bones and muscles, that the bird may cut the air with more rapidity! What incomparable art in the formation of the tail, to make it in some measure serve as a rudder to direct the flight, and help the bird to ascend and descend in the air, and prevent the unsteadiness of the body and wings! In some birds the claws are large, and furnished with membranes that extend and contract for the purpose of swimming: in others they are sharp, and bent down at the point, that they may walk the firmer, perch, seize, and hold their prey. In some the legs are long, that they may walk into and rake their food out of the water and marshes: in others they are shorter; and in all are adapted to their way of living, and whatever they require.

Who is there that will not in this acknowledge the supreme intelligence of our Creator and Benefactor? Is it possible that things so wonderful, so regular, so admirably proportioned, should be the work of a blind chance? Could any one be persuaded that such a multitude of veins, muscles, joints, &c. should be put in motion in each animal without design? and that all the parts, even the smallest, should be connected with each other, and perform their different offices with such perfect harmony and regularity? Ought it not rather to lead us to think of the Creator of all things, whose wisdom and goodness hath placed so many creatures exactly in the circumstances most suitable to them? Let us, then, make use of all these objects to glorify our Creator; and let us seek true wisdom, by endeavouring to be more and more acquainted with this great Being, who has so gloriously shewn himself in all the creatures formed by his hand.

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JUNE XVI.

The Dew.

THE wise Ruler of the world, who watches continually over his children, and provides for all their wants, makes use of more than one means to render the earth fruitful. Sometimes it is by inundation: It is true, that when these lay countries waste, the farmer, who only thinks of the present, gives way to ungrateful murmurs; but, in the end, if their happy consequences for the general good are properly considered, it must be allowed they are very beneficial. Sometimes it is by a river, which, like the Egyptian Nile, has the singular property of overflowing its banks at certain marked periods, to water a country where it never rains. Sometimes it is by rains, which fall more or less frequently, in order to cool the air, and water the parched ground. But the most common means, the surest, and most universal, and that which men the least attend to, and are least sensible of its value, is the dew. This inestimable gift of Heaven, which even in years of the greatest drought, supports and preserves the plants from perishing, is those sparkling drops seen in such profusion, morning and evening, on the leaves of trees and plants. The dew does not fall from above, as was formerly imagined; it does not descend from the highest parts of our atmosphere; and still less is it the sweat of the stars, as superstition had supposed. This pretended celestial origin has probably given rise to the folly of some alchymists, who hoped to convert dew into gold. It is now generally allowed, that the dew is nothing but the sweat of the plants, and the moisture they draw from the earth. In order to be convinced of this,

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one need only cover a plant with a glass bell, and it will appear, that the leaves collect in the night a greater quantity of dew drops than the leaves of the other plants which are exposed to the air. This certainly would not be the case, if the dew fell from above, and if it did not rise from the ground. Nothing is more easy, either, than to comprehend how it is formed; for nobody is ignorant that the rays of the sun and the heat which is cast on the earth, continually loosen a multitude of thin particles from off every thing; some of which rise into the atmosphere, and the rest collect in the form of drops of water. This account of the dew explains it to us, how it happens that it is sometimes hurtful, and sometimes not so. Its nature evidently depends on the quality of the vapours of which it is composed. The wind carries away the light exhalations as soon as they are formed, and prevents them from falling in drops. This is the reason that there is most dew when the air is very calm. By this wise plan of the Creator, the plants can vegetate and grow in countries even where there is no rain; for the soil of those parts being sandy, porous, and very moist underneath, the heat draws out a great quantity of dew, which supplies the place of rain.

Those different methods which Providence makes use of to moisten and fertilize the earth, ought to remind us of those he employs to improve the barren heart of man, and to make it fertile in good works. Chastisement, more or less severe, blessings of every kind, exhortations, warnings given us from the example of others, and a thousand such means, are made use of by our gracious God, to lead us to himself, to sanctify us, and to induce us to bring forth the fruits of righteousness. Sometimes in the natural world there comes a storm of rain from the clouds, which deluges the country, drags every thing along with

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it, and makes the rivers overflow their banks. At other times, God calls the soft dew from the earth, and thus, in a manner secretly, grants the wishes of the farmer for rain. It is thus in grace he also makes use of different means to arrive at the merciful end he proposes. How many hardened hearts oblige him to speak in thunder and lightning, as formerly on Mount Sinai! Less terrible means are employed to save and affect others; with a gentle, mild, and persuasive voice, God calls them to himself: He awakens their consciences, and refreshes their souls with the beneficent dew of his grace. Let this conduct of our heavenly Father serve as a model for ours. Let us employ all sort of means to reclaim our fellow-creature, to make him better; but let us particularly endeavour, from the example of God, to gain Him rather by kindness than by punishment. Let us imitate the benèficence of the Lord: We see how he refreshes the parched earth with dew, he revives and gives new life to the plants. Let us consider how many of our fellow-creatures are in distress, and languishing for want. Let them not languish in vain. Let us endeavour to revive their hearts with benefits, and to pour as many blessings on our fellow-creatures as the dew sheds upon the plants.

JUNE XVII.

Life and Labours of the Bee.

IN the fine days of the present season, in this time of cheerfulness and joy, every thing is in motion, every thing throughout the animal world is full of life and activity; but there are no creatures so active as the little republic of bees. At least, of all the insects round us, there are none we can better learn to be acquainted with, or

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which can afford a more pleasing scene. The bees assemble in great numbers, either in hollow trees and cavities, or in a sort of baskets, called hives, where they are collected by the art of man. They disperse on all sides, and, by means of their trunk, they gather honey and wax from the stamina and juice of the flowers. When their harvest is made, they convey it into their storehouse, which they fill from top to bottom with cells in form of hexagons. They inhabit some of these cells; others are designed to receive the eggs, and to lodge their young; and the rest serve as magazines to deposit their winter's provision of honey in. Amongst these bees, which form altogether but one family, there is one larger than any other, which is a female, and therefore called their queen. To her alone all the young bees born in a hive owe their birth. From the eggs she laid in the cells, there come out worms, which the working bees feed with their trunk. Afterwards this worm remains near fifteen days, to all appearance dead, in its cell, which is enclosed with a little wax lid. In this inanimate state it is called nympha. When its time is accomplished, it opens its tomb, and comes out in the form of a young bee. Besides the queen, there are in each hive two sorts of bees, the drone, and the working bee. The former are males: They impregnate the queen, and serve her as a guard. The bees have two horns on their heads, which guard their eyes, and warn them of dangers. They have fangs or claws they make use of in their work, and a trunk or hollow tube, which they can draw in and out of its case as they please. This instrument, supple and moveable in every way, reaches to the very bottom of the cup of the flowers, where they gather their honey, and passes through the case into the bag of honey placed within their bodies, from whence the honey is afterwards poured into the cells of the storehouse. The bees have six feet: With the two first, and

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their fangs, they form the wax or meal of the flowers into little balls; and with their middle feet they put them into a hollow, shaped like a spoon, which is in their hind feet, which are also furnished with hair, in order to retain the wax, and prevent i. from falling when they are flying. Laden thus, they return to their cell, without losing their way, though they are sometimes above four leagues from it. When they arrive, they find other bees waiting for them, to assist them in unloading their booty, and then they all work in common to employ those provisions for the general use of the hive. They stop every crevice with wax, to keep out any foreign animal; but leave openings for themselves to go in and out. The queen and the working bees have, at the extremity of the body, a sting inclosed in a case, which they make use of to wound or kill their enemies: But the wound they give is generally fatal to themselves, when the sting remains behind.

Every thing in those little animals must excite our admiration; the formation of their limbs, so regular and so well adapted to their kind of life, the care they take of their young, the art with which their cells are built, their activity, their industry and intelligence. Let us never pass by a beehive with indifference. Let us admire them, and this admiration may lead us to more sublime thoughts. If we love to reflect on our Creator, we shall find him here. This interesting scene will lead us to him, and we shall adore his wisdom, his power, and his goodness, in the production of these little creatures.

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JUNE XVIII.

The Exterior Parts of Plants.

IN order to form any idea of the inimitable art which appears in the vegetable kingdom, we must go by degrees. Our understandings are too limited to see the whole together, and to acquire a perfect knowledge of it. We must be content with some observations, and pass from visible to invisible things, from simple objects and individuals, to those of great compass, and more general. Let us begin, then, by considering their exterior parts, and let us first dwell on their roots. They are so constructed, that, by means of the principal root, fibres, and little roots which grow out of it, the plants are fastened to the ground. The pores of the root serve to receive the watery and nutritive juices which the earth contains. Out of the root grows the stem, to which the plant partly owes its strength and beauty: Its form is varied according to the nature of the plant. Sometimes the stem is formed like a pipe, strengthened by different knots curiously placed upon it: At other times the stalk is so weak, that it requires a support round which it may twine itself, and fastens by means of some little hooks. Sometimes also the stem rises majestically, like a strong pillar, is the ornament of the forests, and seems to brave the storm of winds: The branches extend themselves like the arms of the human body, and are very regularly distributed. They spread and divide into boughs, which are placed collaterally, and in the same order as the principal branches. The buds which come upon the branches, are nothing but little plants, which, being put into the ground, take root there, and become a whole, like that of

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which they were before only a part. The leaves, that pleasing enlivening ornament of the plants, are regularly placed round the stalks and branches. Amongst a thousand, there are not two whose leaves are perfectly alike; each has a different make, different out-line, different size, and different ornaments. The leaves are simple, or a compound, fleshy or dressed, smooth or indented and curled. The blossoms of trees, whose beautiful enamel forms one of the greatest ornaments of nature, are not less varied than the leaves; some are plain, and have but one flower others have several: here we see a vase opening gracefully; there we see figures in the shape of a mouth, an helmet, a bell, a star, or a sun: a little farther, we observe the papilionaceous, so called, because they a little resemble a butterfly with spread wings. Some leaves or petals are placed carelessly round the plant; others form circles, bouquets, garlands, &c. round it. From the centre of the blossom rises a little pillar, sometimes more than one, which are hollow within, round, and often pointed at top; they are called pistils. Round them there are generally other lesser pillars, called stamina, to support their heads, which are a sort of cases full of very fine powder. How is it possible to describe the delicate texture of many of the blossoms, the sweetness of their perfume, the liveliness, variety, and beauty of their colours! After the blossoms, come the fruit; which supply what is necessary for the use of men and animals. The berries and fruit contain, under one or several coats, the seed of future plants. The outward forms of the fruit and seeds vary as much as those of the leaves and blossoms.

There is scarce any form that is not distinguishable in one or other of them. All these parts of plants have their proper use and design: Let the smallest part of them be taken away, and

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the plant will lose some of its perfection, its beauty, growth, or increase. As extraordinary as it may appear, it is certainly true, that all those parts, without one single exception, are more or less necessary to the whole. Try the experiment, take the leaves from a tree, and it will soon wither and perish. It is the same with all the other plants. There is nothing superfluous amongst them; nothing that has not its use; nothing that does not evidently tend to the perfection of the whole. But, in discovering this connection, this harmony, this wonderful arrangement of the vegetable kingdom, in seeing that the whole is beautiful, and ordered from general laws, though differently applied, shall we not conclude that the Author of all those beauties must necessarily have infinite wisdom? This consequence is as natural as that we draw, when, on hearing a person speak, we conclude that he must be near us. Let us then raise our souls to the Creator of all things: we shall every where find Him. It is for that purpose he formed the plants so magnificently, and thus displays to us their use and beauty. Let the Divine Wisdom be ever present to us: it will appear in the smallest blade of grass, if we take trouble to examine it closely. —Such reflections will make us more sensible of the pleasures of summer, and still more embellish it in our eyes. The more we accustom ourselves to reflect on the wisdom of God, the more satisfaction we shall have in contemplating nature: at each flower we behold, we shall cry out with transport,—How great is our Creator! How admirable his wisdom!

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JUNE XIX.

Hymn of Thanksgiving for the Works of the Creation.

TO thee, O Lord, from whom proceedeth every blessing, and who dispensest them so bountifully, to Thee belongeth glory, honour, and thanksgiving. Thou hearest the cries of the young raven, and takest pleasure in the song of the lark: Vouchsafe to listen also to my voice, and accept the tribute of praises due to Thee. The least of the creatures formed by thy hand proclaims thy wisdom. The traces of thy goodness and power are seen from one end of the year to the other, and are continually renewing.—Each blade of grass declares the greatness of God and our own nothingness. With parental tenderness Thou providest for our necessities, and givest to men and animals their proper food. From dawn to dawn thy blessings continually succeed each other; and even the wicked man feels the effect of thy goodness. O God! who is like unto Thee! The earth is full of thy goodness and wisdom! Vouchsafe to teach me, O Lord! how to praise thee worthily. Incline my heart to love Thee, and let me hereafter live only for him who heapeth such blessings upon me. It is in thy name, and in the hope of thy blessing, that the farmer sows his corn: it is Thou who makest the seed fruitful. This earth, that for our sins had a curse laid upon it, is blessed again by its Creator, and bringeth forth fruit plenteously. Thou waterest the furrows of the fields. Thou clothest the meadows, the valley and the plain, with flowers, with groves, with trees, and herbage. Thou orderest the cool and refreshing dew to moisten our gardens and fields, and to shed fertility and

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abundance upon them. The barren and dry soil Thou waterest with gentle rains. The cold and wet places Thou warmest with the rays of the sun. The weather and the seasons Thou orderest wisely, and in the manner most beneficial to mankind; and, in the midst of all the vicissitudes of heat and cold, rain and drought, we still behold the food destined for us spring up, grow, and ripen, through thy goodness. Thou coverest our fields with rich harvests, and the wings of the wind support the waving corn. Thou adornest the tops of barren rocks with grapes. Thou dressest our pasture with clover; and, by thy command, the fountains and rivulets refresh the thirsty animals. Thou causest the tree to take root, and it prospers. Thou causest a quickening sap to circulate through its trunk, and givest it force to branch out with leaves and blossoms, while the abundance of fruit, under which the boughs bend, proves the pleasure Thou hast in doing good. O! let us therefore glorify our Creator, our great Benefactor! Let us bless his holy name! Let us praise his mercies with transport! Great is the Lord our God! All his works are holy and wonderful! Let us exalt his almighty name! The Lord is good! It is meet that the righteous should publish his praise for ever and ever.

JUNE XX.

Caterpillars.

THOUGH these insects are so disagreeable to the lovers of gardens, and so disgusting to over-delicate people, they nevertheless deserve our attention. Caterpillars generally live upon our trees, and we have such an aversion to them, that wherever we meet with them we destroy them. This is the reason we do not deign to honour

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them with a look, and still less to examine them attentively. And yet there is no doubt but these insects may very agreeably amuse an attentive observer of nature. Let us here try to prove it. Perhaps, by raising the curiosity of those who have hitherto neglected them, they may be induced not to trample them under foot, without at least first observing their wonderful formation, and taking from thence occasion to look up to the Creator. The number of species of caterpillars already known amounts to more than three hundred, and there are new ones daily discovering. Their shape, their colour, their form, their inclinations, and way of life, all differ in some respects; but this circumstance they have in common, that they are composed of rings, which, by moving to and fro, carry the body wherever they want to go. Nature has given them two sorts of feet, which have each their particular use. The six fore-feet are sorts of hooks, which they make use of in taking a fast hold and clinging to any thing. The soles of the hinder-feet are broad, and armed with little sharp nails. With the hooks they draw to them the leaves, the grass, and whatever they want for food, and they fix the fore part of their body with them while they are drawing up the hind rings. The hinder feet serve to keep them firm, and to hold by whatever they are to rest upon. When they are on a branch or a leaf, they can seize on food at some distance; for, by hooking themselves on with the hind-feet they stand up, and raise the fore part of their body, move it about and poise it in the air on every side, get considerably upon the leaf, reach their food, and take it with their claws. However adapted the body of the caterpillar is to its several wants, it is remarkable that its state is but transient, that the limbs last but a certain time, and that this creeping worm becomes a chrysalis, without feet or motion, till it

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is metamorphosed into a creature classing with the inhabitants of the air. Were it for this reason only, the caterpillars would be worth our attention. Towards the end of summer, and often sooner, after having satiated themselves with verdure, and after having changed their coat several times, they cease to eat, and begin to build a house, in order to end their life in it, with the caterpillar state, and to be afterwards transformed into butterflies. The chrysalis is full of a sort of thick milk, which serves for food to the butterfly till it comes out. When it is entirely formed, and its parts arrive at consistency, and that a gentle warmth invites it to quit its prison, it makes itself a passage through the end of the chrysalis that is largest, and at the same time the thinnest. The head (which has always been turned towards that end) disengages itself, the horns lengthen, the feet and wings spread out, the butterfly takes wing and flies away. It preserves none of its former state. The caterpillar which changed into the chrysalis, and the butterfly that comes out of it, are two animals totally different. The former was rough, hairy, and often hideous; the other is adorned with the liveliest colours.—The former limited itself to a gross food; the latter goes from flower to flower, and freely enjoys all nature, of which it is itself the ornament. Will not this description reconcile every one to these insects, and put an end to all aversion to them?—Perhaps some may still think they have a right to ask, To what purpose, after all, are these caterpillars? Would it not be better to be entirely free from them? No: on the contrary, it is certain, that the world would not be as perfect as it is, if there were no caterpillars in it. Take away these insects, and you deprive the birds of a considerable part of their subsistence. As the birds were to feed on caterpillars, it was just that the Creator should ordain for their food the leaves and plants, to which they have as good a right as us. It is

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true that the voracity of these animals makes them sometimes troublesome to mankind; but this is an evil which the Creator permits with much wisdom. For the mischief the caterpillars sometimes do us may serve to humble us, and make us recollect the uncertainty of all our earthly possessions. And, even supposing we could not penetrate into God's reasons for forming such creatures, we should not therefore have a right to deny their utility. We ought, on the contrary, to take occasion from thence to acknowledge our ignorance, and trust in the wisdom of God.

JUNE XXI.

The Beginning of Summer.

THIS day summer begins. Many of us have often seen the changes occasioned by this day throughout all nature: but is it known how it happens that the sun remains so long afterwards above the horizon: why this is the longest day of the year; and why, in reckoning from this to the end of autumn, we perceive the heat and length of the days diminish in equal proportion? All these changes are owing to the annual course of our globe round the sun. When that body enters into the sign of Cancer, the earth is so situated, that all its northern side is turned towards the sun, because the Creator has inclined the axis of our globe towards the north, and that it preserves that direction invariably. On this direction, and on the constant parallelism of the axis, depends, properly speaking, the changes of the four seasons of the year. Let us here reflect a moment on the goodness and wisdom of God, in thus inclining the axis of the earth. If it had been in a perpendicular direction, our globe would have been a very melancholy habitation, either for plants or animals. Neither growth nor

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diminution of days could take place, nor the several changes of the seasons. How much to be pitied should we be who live in Germany, and consequently near the north! The air we should breathe would be always as sharp as in March or September, and our soil would afford nothing but a little moss and grass. In a word, the greatest part of the two hemispheres would be but a frightful desert, inhabited only by a few insects. In our climate, nature has at this time almost ended her annual work. She has already lost some of her variety. Nothing can be more green than the vines, the orchards, and the forests; but the shades of colour are not so pleasing as they were. The meadows begin to whiten, and their flowers are mowed down. The corn insensibly grows yellow, and the number of flowers diminish. The variety and brightness of them, the various notes of numberless birds, had before all charms of novelty, and afforded us the most pleasing sensations; but now, the nearer we approach to autumn, the more these enjoyments diminish. The nightingale is silent, and the great heat makes it inconvenient to walk. Do we not here see an emblem of life?—Are not the pleasures we enjoy equally transient? Even the most innocent of them, such as nature in the beauty of spring presents to us, are liable to change, and give place to other objects. What we at present observe in the summer of nature, we may observe in the summer of life. When we have attained our fortieth year, which is the beginning of a riper age, the world loses part of its charms, such as delighted us in our youth; and, when we approach the autumn of life, we become a prey to cares, less calm, less serene, less lively and joyous than we were. We observe that our strength of body insensibly wears away with age. In fine, there come days when we say, "I no longer take pleasure in them." But with what a lively sense of joy do I, at this moment, raise my

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soul towards Thee, O Lord! who directest the seasons, who art the Father of all, and the centre of felicity! I again acknowledge thy wisdom and goodness in the regular succession of the seasons. Grant that I may never forget Thee in the enjoyment of the many pleasures which summer sheds over all nature: thou who disposest all things, and whose glory each season proclaims. May I be so much more inclined to it, as this may possibly be the last summer I shall live to see. Alas! how many of my friends and acquaintance, who were last summer enjoying with me the beauty of this world, have been carried off by death, before the next summer had begun! Perhaps I shall soon be united to them. Perhaps it is for the last time that I have contemplated, in this world, the charms of nature. I will therefore enjoy this summer as if it was to be my last. I will glorify Thee, O God! with as much ardour as if I was sure of never more having it in my power to acquit myself of this duty. I will live so as never to regret having so often seen the return of the seasons. Vouchsafe, O Lord! by thy grace, to confirm me in these resolutions; and as it is Thou that inspirest them, give me strength also to put them in execution.

JUNE XXII.

The Nightingale.

THE nightingale is a musician of the first rank amongst the inhabitants of the air. When all the birds, who, during day, entertained us with their notes, cease to be heard, it is then that the voice of the nightingale is raised to animate the woods and groves. When we listen to the brilliant sounds of that voice, we are apt to conclude that the bird must be large, that the throat must have

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great strength; and the inimitable charm of her melodious notes makes us presume she surpasses all others in the beauty of her form. But it would be to no purpose to seek these advantages in the nightingale: It is a bird of poor appearance, whose colour, form, and the whole of its exterior, is void of any thing attractive or majestic, and has nothing in the least distinguishing. Nature has, however, compensated for its plainness, by giving it a voice irresistibly charming. Listen to its fine long quivering notes: what variety, sweetness, and brilliancy in them! When she begins her song, she seems to study and compose before hand the melodious notes she wishes to be heard. She begins softly: then the notes swell gradually, till they run with the rapidity of a torrent: she goes from serious to gay, from simple notes to the wildest warblings; from the highest turns and shakes to languishing sighs; and has, throughout the whole, the art to please the ear.

This bird may give rise to many useful and edifying reflections: for example, we learn this truth from it, that homeliness of body is sometimes united with very estimable qualities, and does not exclude beauty from the soul. How unjust then are those, who, only attaching themselves to the features of the face, and to exterior qualities, praise or blame nothing but what strikes their senses, and despise those who have bodily defects. Let us learn to judge with more equity. Any man, though deprived of the advantage of figure and fortune, who proves himself by his conduct to have the soul of a sage or a saint, is by much the more worthy of our esteem. It is the perfection of the soul only that gives true merit to man, or is worthy our admiration; the rest can only seduce those who do not know the value of wisdom and virtue. Have we not often known persons, neither distinguished by rank or exterior

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qualities, who have done the greatest services to church and state? Crooked and deformed people have often shewn more greatness of soul than others possessed of the most beautiful person and finest form. It is a lesson not to trust to appearances. Those we despise may often prove to be superior to ourselves.

When we hear the skilful harmony of the nightingale, does it not naturally lead us to the Creator, from whom she has this talent? What wisdom must there be in the formation of this bird, to make it capable of such sounds! Lungs so delicate as those of the nightingale, the motions of which are so violent, must be easily wounded, if they had not the singular advantage of being fastened to the back-bone by a number of little sinews. The orifice of the windpipe is very large, and that is certainly what most contributes to the variety of those sounds, which, in charming the ear, fill the soul with sweet and pious joy. Is it possible not to trace a divine wisdom and providence in this? and will not even the song of the nightingale lead us to glorify the Author of all nature? Lovely songstress! I will not leave thee till I have learned from thee the art of praising my Creator and thine. Pour, with thy song, gratitude and joy into the hearts of the many insensible mortals, who, in these cheerful days, contemplate the beauties of the creation with indifference.

JUNE XXIII.

The Pleasures which Summer affords to our Senses.

SUMMER has inexpressible charms, and gives us daily proofs of the infinite beneficence of our Creator. It is the happy season in which God pours out the treasures of his blessings in the

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greatest abundance on every living creature. Nature, after having revived us with the pleasures of spring, is continually employed, all the summer, in providing for us every thing to please our senses, to make our subsistence easy, to satisfy our wants, and awaken in our hearts just sentiments of gratitude. Before our eyes there grows, by virtue of the secret laws of nature, an innumerable quantity of fruit in the fields and gardens; fruits which, after having pleased the sight, may be gathered and preserved for our food. The flowers afford the most agreeable variety to our senses; we admire their rich dress, and the inexhaustible fertility of nature in the multiplicity of their species. What variety and beauty also in the plants, from the humble moss to the stately oak! Let us climb the highest mountain, seek the cool shade of the woods, or descend into the valley, we shall every where find new beauties. A multitude of objects strike our eyes at once, all different from each other; but each in itself has charms enough to fix our attention. There we see innumerable flowers; here living creatures of different kinds. If we lift up our eyes, they are delighted with the blue sky; if we cast them on the ground, they are refreshed by the beautiful verdure with which it is clothed. Our ear is charmed with the cheerful notes of the winged songsters; the variety and simplicity of their melody fills the soul with the sweetest sensations. The murmuring of the brooks, and the silver waves of a fine flowing river, also please the ear and eye. It is to indulge our taste that the strawberries and other pleasant fruit ripen; while at the same time they cool the blood. Our barns and granaries are filled with the new productions of the fields and gardens, which afford us the most wholesome agreeable food. The smell is struck with the sweet perfume that exhales on every side. In a word, a thousand pleasing objects affect

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the senses, and raise our sensibility. Numerous flocks feed on the profusion of bountiful Nature, to procure us pleasant and wholesome milk, and nourishing meats. Abundant rains moisten the ground, and open to us new sources of blessings. Tufted trees and groves afford us a delightful shade. All that we see and hear, all that taste or smell can convey, increase our pleasures, and contribute to our happiness. But the creation is a still greater and more enchanting object for the mind than for the senses. In points which the latter cannot reach, the mind discovers beauty, harmony, variety, and new pleasures.

JUNE XXIV.

A Sketch of the inward Parts of the Human Body.

THE more difficult it is to acquire a knowledge of the inside of the human body, the more necessary it is to make use of the information with which we are furnished by skilful anatomists. It is with this design that I am going to give a short description of those parts.

The construction of the heart, which is placed near the middle of the breast, and is the moving principle of the whole machine, is worthy of admiration. It consists of musculous fibres curiously interwoven. Two cavities, separated from each other by a partition, and which are called ventricles, are formed in the inside of this organ. As the heart continually dilates and contracts itself, and expels from the lungs the air which it receives through the nose and mouth, this is what occasions our breathing. The lungs are of a spongy substance, which, like the bellows, extend and contract, in order to draw the air in, and let it out again. They swell out on both sides, and fill almost the whole space of the breast, to refresh

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it with the air it draws in, and, at the same time, to prevent the blood from too much attenuation. The breast is lined with a fine membrane, called pleura. Under the lungs is placed the stomach, which receives and digests the food. It is shaped like a purse. On the right side is the liver, which covers one side of the stomach, and by its warmth assists the digestion. It separates the bile from the blood, which collects in a particular vesicle, and descends into the bowels. The irritation it occasions there facilitates the passage of the excrements. Opposite to the liver is the spleen. It is a soft bag which stretches easily. The blood is conveyed into it by arteries, and flows out of it through the veins. Behind the liver and spleen are the kidneys. There are two of them, one to the right, the other to the left. The use of them is to separate from the mass of blood the humours which overflow into the bladder. Under these parts are placed the entrails, joined to the mesentery. They complete the separation of the digested food, and serve to expel the grosser parts of it out of the body. The mesentery is a great membrane, which folds several times over, and forces the entrails to fold themselves in the same manner. There are a great quantity of little veins, as fine as a hair, upon the mesentery. They are called milk veins, because they contain a juice resembling milk. In the middle of the mesentery there is a large gland, where the milky veins meet, as in their centre. A skin, full of folds, of glands, and muscles, covers over all the entrails. That part of the body called the belly, and which begins at the stomach, is separated from the breast by the midriff. It has several openings to let the vessels pass which are to descend to the lower parts. The liver and spleen are fastened to it; and the shaking of it not only occasions laughter, but serves also to disengage the spleen from the humours which incommode it.

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These are the principal parts of the breast and belly; independent of which there are several others which communicate with them. At the beginning of the neck is the windpipe and the weasand. The œsophagus is the channel through which the food passes to the stomach. Through the weasand the air penetrates to the lungs. Whilst the lungs are sending back the air through this channel, the voice forms itself, at the same time the breast throws off the superfluous humours. At the entrance of the weasand there is a little lid, which opens to give passage to whatever is to go out through that pipe. The lower orifice of the stomach is provided with such another cover, which opens when the food presses upon it, and then closes upon it, to prevent its rising up again. In the upper part of the head is placed the brain, which is capable of receiving impressions from exterior objects. The whole mass of the brain is covered with two thin transparent membranes, one of which, called the pia mater, is the first envelope. The second, called dura mater, is interwoven with arteries and veins. Independent of these parts, each of which have their settled place, there are others spread throughout the whole body, such as the bones, the arteries, veins, lymphatic vessels, and nerves. The bones, set in their joints, partly serve to support and give the power of motion to the body, and partly to preserve and guard its noble parts. The arteries and veins are mixed throughout the whole body, in order to nourish it with the blood they convey to every part. There are also several lymphatic vessels, which generally join to certain glands, and receive a transparent yellow liquor, which they afterwards let flow throughout the body. The nerves, of which they reckon ten principal pair, are little fibres springing from the brain, and from thence are spread over the whole body to the very extremities of it. Some suppose they are hollow, and

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contain a sort of marrow like that of the brain. The nerves are the organs of the senses, and of all the motions of the machine. All those parts are pierced with holes, in order to let the light and subtile matter, and whatever is superfluous in the body, evaporate. These orifices are called pores. The same wisdom, so visible in the inward and solid parts of the body, is equally so in its fluid parts. The blood, the chyle, the lymph, the marrow, the bile, the nervous juices, and the different sorts of viscous and gelatinous humours, supplied by innumerable glands; their several properties, their design, their effects, the manner in which they are prepared, filtered, and separated from one another; their circulation, their reparation; all these prove the most astonishing art, and the most profound wisdom.

Let us sum up what has been just said in regard to the interior construction of the human body. The bones, by their solidity and their joints, form the foundation of this fine machine. The ligaments are strings which unite the parts together. The muscles are fleshy substances, which act as elastic springs. The nerves, which are dispersed over the whole body, connect all the parts together. The arteries and veins, like rivulets, convey life and health throughout. The heart, placed in the centre, is the focus, or the acting power, by means of which the blood circulates, and is preserved. The lungs, by means of another power, draw in the outward air, and expel the hurtful vapours. The stomach and intestines are the magazines where every thing that is required for the daily supply is prepared. The brain, that seat of the soul, is formed in a manner suitable to the dignity of its inhabitant. The senses, which are the soul's ministers, warn it of all that is necessary either for its pleasure or use.

Adorable Creator! with what wonderful art hast Thou formed us!

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JUNE XXV.

Electrical Fire.

FROM the many experiments made in our time, nobody any longer doubts the existence of electrical fire, the singular effects of which have fixed the attention of all Europe for above thirty years. It is proved that this fire is distributed equally throughout all bodies: but it is, like the air, not perceptible to our senses, but when put in motion. It is also necessary that, when the balance is interrupted by any cause whatever, it should be restored, before we can sensibly perceive the electrical fire. Two different sorts of bodies must be marked or distinguished in this case. The one sort are such by nature, that the electrical fire, let it consist in what it may, can be produced in them, and increased by means of friction. The others receive their electrical force, not by friction, but by communicating with the first. Those of the former class are chiefly glass, pitch, rosin, sealing wax, silk, hair, and the air. All other bodies, but particularly water and metals, belong to the second. The bodies of the first kind are capable of preserving the electrical matter collected in them. Those of the second, on the contrary, lose it as quick as they receive it. Machines have been invented, in which, by means of a great wheel, a rapid motion is given to a glass globe, which, in turning round, rubs against the hand, or against a cushion. By the effect of this friction, the globe preserves its electrical force, which may be extended as far as is desired, by means of iron bars or chains, which communicate with the glass globe. If we put our hand on one of these bars, we receive a shock; and if it is dark, we see bright sparks of fire come from it. If several persons together

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form a circle, holding each other by the hand, they will all receive the electrical stroke at the same moment; which stroke may be made more or less violent, as they please. There may be given to electrical fire sufficient force to kill not only sparrows, and other little birds, but hens, geese, ducks, and even sheep. This experiment takes place by means of large glass bottles filled with water, and tied together with metal chains, which fasten them also to the glass globe, put in a state of friction, as mentioned before. The water conveys a great quantity of electrical matter into the inside of the bottles, and, at the same time, their outside surface loses an equal quantity of it, by means of the water which is without. A violent flash, a great explosion, a violent commotion, the combustible matter taking fire, and the death of the animals, are the consequences of this experiment. There are others also which are common to all these sorts of experiments, such as a sulphureous smell, an agitation of the air, and a new property of the electrical matter. It has been observed that some experiments failed because the iron bars, which were to serve as electrical conductors, were too angulous and too much pointed. It was suspected that the electricity lost its force by the points: this idea was confirmed by putting the face, or hand, near the point of the bar, when it could be distinctly perceived that there issued from it a torrent of electrical matter. It was from thence concluded to be possible that those points which ejected electrical matter, might also serve to attract it, and many experiments have proved the truth of this conclusion.

If any one should think these observations of no importance, let him consider that we may learn more and more the use of this extraordinary phenomenon of nature, from which a double use has already been drawn. The physicians have joined electricity to their art; and there are examples of

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its having cured paralytic limbs. Naturalists also have discovered a great analogy between lightning and electrical fire, which has given rise to new opinions upon the manner in which thunder is formed, and has changed the former ideas on that subject. Thus, from time to time, we receive new solutions of the mysteries contained in the great works of our Creator. How limited are the views of man! and how little attention is paid to important things placed before our eyes, since the phenomena just mentioned were for many ages unknown; and even now how little are we acquainted with nature! and how much have we not yet to learn!

JUNE XXVI.

The Manner in which Thunder forms itself.

FORMERLY, and even at the beginning of this century, it was thought that thunder proceeded from the inflammation of salts, of sulphureous matter, and other substances in the air. It was imagined that there was the greatest resemblance between the effects of fire-arms and that of thunder and lightning. However, all the explanations by which they endeavoured to establish this system were not sufficient to remove the difficulties which opposed it, or to account for the supposed effects. But since the phenomena produced by electrical fire have been observed with attention, it has authorised us to assign a very different cause for thunder. The perfect resemblance there is between that and electricity, have convinced the naturalists that they are the same, and that electricity is in our hands what thunder is in the hands of nature. The latter executes in the great, what we imitate in the little. It will not be difficult to convince even those who have not studied natural philosophy,

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if they will only take the trouble to compare the effects of thunder with those of electrical fire. The effects of thunder appear by loud noise heard at a distance, and by conflagration. Buildings that are struck with it are set in flames. Men struck with it are blackened and burned. Sometimes, however, there is no trace of fire, and it is the blow that occasions death. Their clothes are all torn to rags. The lightning casts them to a distance from the place they were in; and part of the body that has been struck is often pierced with holes. Sometimes large stones are broken by lightning, and it destroys the ground it falls on. Electricity produces the same effects, but in a less degree. When by means of water its force is increased, the electrical lightning is followed by a very strong commotion. Very compact bodies are pierced with holes; birds and other little animals are killed by it; and every electrical flash is attended with a loud noise. That torrent also of fire which flies off hissing from the point of electrified bodies, is one of the phenomena which are found in lightning. And in regard to its swiftness there is still a greater resemblance between thunder and electricity. If, during a storm, a sword or chain is hung up in the air by silken strings, they become electrical. If we put our finger near it, there will come out of it sparks of fire, more or less, in proportion to the degree of the storm, or our distance from it. In a word, all the effects of electricity appear during a storm. After such experiments it can no longer be doubted that the air is electrified when there is a storm, and that thunder and lightning are the effects of a violent electrical fire.

Thus all that appeared wonderful and tremendous in these natural phenomena, disappear by degrees, as we become better acquainted with the laws of nature. Every one, consequently ought to have a general knowledge at least of the first principles of natural history. Superstition and

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fear, which often mix with our observation of nature, would soon be at an end, if we either resolved to reflect upon it ourselves with more attention, or to consult others who are well informed upon the subject. Let us make use of what we have acquired in respect to the nature of thunder, so as to banish the dread and horror which so strongly seize our minds at the approach of a storm; and let us always look up to and trust in that God who alone worketh such great marvels. For though we can thus assign the causes of thunder, it is not therefore the less wonderful. There are even some circumstances of it that will ever be inexplicable to the most penetrating understandings. It is enough to know that the nature of the air, and of the atmosphere which surrounds us, renders this phenomenon necessary; that storms, in the hands of God, are a means of making the earth fruitful, and therefore ought to incline us to pay a tribute of adoration and gratitude to our Creator.

JUNE XXVII.

Herrings.

THIS is the season in which they begin to fish for herrings on the coasts of England and Scotland; by which means we shall receive, in a short time, a great quantity of these fish, which feed the poor, as well as the rich, during the whole year. Let us examine what is most important in the natural history of these fish. Innumerable shoals of herrings live in the Frozen Sea, near the Arctic pole; but, at a certain period, they quit that place, and come in multitudes to the coasts of England and Scotland. It is not yet positively ascertained what may be the cause of this emigration. Some think it is to avoid whales and other great fish in the Frozen seas; others imagin e that the prodi-

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gious increase of the herrings obliges them to take these long voyages, and to divide into separate colonies, lest they should be in too great quantities to find sufficient food in the northern seas. Perhaps, also, it is the desire of propagation, and a peculiar instinct, which leads them to the places most favourable for the increase and preservation of their race. It is certainly these reasons in general that occasion such shoals of herrings to quit the north at the beginning of the year; for, in the month of March, a wing of their army had already reached the coasts of Iceland, and it is their western wing. The herrings are at this season so plentiful there, that, by putting the shovel with which the sails are watered into the sea, there are great quantities of them taken up at a time. The eastern wing advances farther into the Baltic sea. A part of it turns towards the Cape North, sails along the coast of Norway, and enters through the southern straits into the sea. Another part gains the northern point of Jutland, then enters into the Zuyder zee, and from thence passes again through the Baltic sea, in order to return to the place from whence it set out. But the largest detachment of the eastern wing, is that which turns to the western coast, in order to advance directly to the Orkney islands, where the Dutch go to catch them. Towards the 8th of June, the sea in those parts is full of herrings. They then direct their course towards Scotland and England, where they fill all the bays and the mouths of the rivers with their fry. After having quitted England, they probably return back to their own country. The prodigious multitude of these fish is surprising: One single herring lays at least ten thousand eggs in the sea near the British coasts. This great fruitfulness makes what is said of the Dutch fishery credible, where there are annually caught about two hundred millions of herrings; a fishery which supports numbers of people, and increases the

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revenue of the Dutch above twenty millions of crowns.

It is but just that we should lift up our hearts to the almighty and beneficent Creator, who, by a guidance full of wisdom, causes these fish to fall into the hands of man. By how many different ways he provides for our support! All the seas, the lakes, and the rivers, are subservient to mankind, and contribute to our preservation.

JUNE XXVIII.

Eclipses of the Sun and Moon.

IT is shameful that, in an age so enlightened as ours, not only the multitude, but even those who pretend to be superior to the common people, should be still so ignorant in respect to those bodies. From thence proceed the superstitious notions which are raised by eclipses of the sun and moon. If any one took the trouble to inquire into the cause of them, it would be found how absurd it is to shut up the wells during an eclipse, to prevent the water from acquiring any hurtful quality, or to take other superstitious precautions, which are melancholy proofs of the ignorance and want of piety in mankind. Let us then examine into this phenomenon, because it is in itself very remarkable, and furnishes us with a new occasion to glorify our great Creator. The eclipse of the sun is an effect entirely natural. It is caused by the moon passing between the earth and the sun. But it can only take place when the moon, which is an opaque body, and dark in itself, comes nearly in a direct line between the sun and our earth. It then conceals from us part of that globe, or the whole of it. The former is called, in the almanacks, a partial eclipse, the latter a total eclipse. Thus

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the solar eclipse is nothing more than the situation of the earth, when the moon passes between it and the sun, interrupting the solar rays. We must not imagine, that the sun is at that time really darkened. It is only concealed from us. It retains its usual splendour; and all the difference is, that the rays which issue from it cannot reach us, because the moon is placed between the sun and our globe. This is the reason that a solar eclipse is never visible at the same time in all parts of our earth; for unless the sun had really lost its light, the eclipse could not be visible at the same time in every part of the hemisphere. It is, on the contrary, always more in one country than in another, and in some places it is never seen at any time. The moon not only darkens our earth sometimes, but the latter also casts its shade upon the moon, and by that means intercepts the rays of the sun from it either wholly or in part; and this is called an eclipse of the moon: But it can only be when the moon is at one side of the earth, and the sun at the opposite side, and consequently, when it is full moon. As that planet is really darkened by the shadow of the earth, the eclipse is perceived at the same time on all the points of an hemisphere of our globe. Some people may ask, what is the use of eclipses of the sun and moon! To those even who calculate the use of natural things from the immediate advantage that accrues from them, the eclipses are of importance. It is by their means that the true position and distance of countries and towns are known; and it is from thence that we have been able to trace accurately the geographical maps of the most remote countries. Eclipses, if well observed, serve also to confirm chronology, and to direct the navigator, by shewing him how far he is from the east or west.

However inattentive we may be to the importance of these advantages, they are not the less essential to us.

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JUNE XXIX.

The Stalk of the Wheat.

WE see that the wheat is growing every day, that the tender ears of corn are insensibly ripening, in order to furnish us, some weeks hence, with wholesome bread: a precious blessing with which nature rewards the labours of man. Let us cast our eyes on a field of wheat; let us calculate the millions of ears of corn which cover one single field, and let us reflect on the wisdom of those laws which procure such an abundance for us. How many preparatives were necessary to furnish us with this most indispensible of all food! How many progressive changes were to take place in nature before an ear of corn could spring up! It is now almost ready to produce its fruit, and invites us to reflect on its construction. When the grain of wheat has been some time in the ground, it shoots upwards a stalk which rises perpendicularly, but only grows slowly, that the wheat may have time to ripen. It is for very wise reasons that it grows four or five feet high, in order to preserve the grain from the moisture of the ground which would rot it. The height of the stalk contributes also to the depuration of the nourishing juices which the root conveys to it; and its round form assists this operation; for, by that means, the heat penetrates equally into every part of the stem. But how is it possible that so slender a stalk can support itself, and bear up its fruitful head, without sinking under the weight, or without being beat down by a breath of wind? The Creator guarded against this inconvenience in the formation of the stem. He furnished it with four very strong knots, which in some measure serve as screws,

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strengthening it, without taking from it the power of bending. The construction of these knots alone shews the greatest wisdom. Like a very fine sieve, they are full of little holes, and through these orifices the juices rise up, and the heat of the sun penetrates into them. The heat attenuates the juices which collect there, and purifies them, by making them pass through a sort of sieve. The stalk is liable to be beat down by storms and heavy showers of rain, but its not being thick secures it. It is flexible enough to bend without breaking. If it was harder and stiffer, it might certainly resist all weather; but would it then serve as a bed for the poor?

From out the chief stem there shoot others not so high, as well as leaves, which, collecting drops of dew and rain, furnish the plant with the nutritive juices it requires. In the mean time, the grain, that essential part of the plants, forms itself by degrees. To preserve these tender sprouts from the accidents and dangers which might destroy them at the instant of their birth, the two upper leaves of the stalk unite closely at the top, both to preserve the ear of corn, and to draw to it the nourishing juices. But as soon as the stem is formed enough to supply the grain of itself with proper juices, the leaves gradually dry and drop off, that none may be taken from the fruit, and that the root may have nothing more than necessary to nourish it. When this scaffolding is removed, the edifice itself appears in full beauty. The bearded corn waves gracefully, and its points serve for ornament, as well as defence against the birds. Refreshed with gentle rains, it thrives till the appointed time, and grows every day more yellow, till, sinking at last under the weight of its riches, it bends its head of itself to the sickle.

What wonderful wisdom and power appear in the construction of one single stalk of wheat,

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and yet we seldom pay attention to it, because it is daily before our eyes. But what other proof of goodness can the Creator give us, if we are insensible to this. Ungrateful, thoughtless man! open thy heart to the sweet sensations of gratitude and joy. As long as thou art capable of contemplating a field of corn with indifference, thou will be unworthy of the food it furnishes in such abundance. Learn to think as a man, to enjoy the noblest pleasure a mortal is capable of in this world, that of tracing thy Creator in every creature.

JUNE XXX.

The Blight.

THAT is the name given to those insects which settle upon the stalks and leaves of plants in such swarms as to cover them sometimes all over. There are as many species of them as plants; and they are more worthy our attention than any other insect, on account of the singularities in them. What distinguishes them, in the first place, from any known species of animals, is, that they not only lay eggs, but also produce young ones alive. In the heat of summer they are viviparous, that is to say, that the young ones come from the mother's womb completely formed and alive; undoubtedly because the plants at that time furnish them with nourishment. Towards the middle of autumn they lay eggs, which are not hatched till the spring following; because, if the young ones were produced sooner, they would perish for want of food. Precisely at the period when the females begin to lay, the males appear; which seem to indicate that their existence was not necessary till then. This supposition is fully confirmed by

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many experiments. If one of the blights is taken at the moment of its birth, and shut up in a glass by itself, it will, thus sequestered, engender another like itself, when it acquires a certain degree of growth; and it will at the end of a few days be surrounded by a numerous family. If the experiment is repeated on one of its young, and even for many generations, the result will still be the same. Let us observe another singularity: in some species of insects, the mates have wings, and the females are without any. In the blight the two sexes are alike, either both produced with them, or both otherwise.—Those with wings are so small, in comparison with the others, that they walk over them as they do upon fruit. This remarkable instance of what may be called singularities in nature (an instance so contrary to the common rules) leads us naturally to enquire why there are singularities in nature, and what could induce the Creator to deviate sometimes from the common laws? In order to answer this question in a satisfactory manner, we ought to be able to take in the whole of all that is created; to know at the same time all the parts of the immense kingdom of nature, and the connection between each, before we can be capable of judging to what, or how far, any thing can be useful or hurtful to the whole. But so deep a knowledge of nature being denied to our weak faculties, let us content ourselves with general arguments. In the first place, God shews us, by these singularities, the command he has over all nature. He is the Supreme Lawgiver, who assigns to every being the law he is inviolably to observe. He, to whom every being is subject, has a right to prescribe such and such rules; but he has also the power to suspend his rules, and make what exceptions to them he pleases. Secondly, We find a great variety in nature, which affords us opportunities, not only

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to rejoice in the contemplation of it, but to admire the glory of the Creator. It is easy to conceive how much the exceptions to the general rules increase this variety, and consequently the pleasure of the observer, as well as the admiration for the Author of nature. Thirdly, Experience teaches us, that the objects we have daily before our eyes become familiar to us: and their impression, so often repeated, leaves us cold and insensible to them. The glorious sun of nature itself does not always interest us, because we have taken the habit of passing over things lightly which we see continually. Therefore every singularity, every extraordinary phenomenon, is a fresh inducement to contemplate the works of God, and serves to rouse us from our indolence. Fourthly and lastly, The singularities of the physical world, which, far from hurting the perfection of the whole, enter into the plan of Divine Wisdom, teach us, that the singularities of the moral world, and the fate of mankind, are equally under the direction of an All-wise Being, who will so order all things that his holy name may be glorified evermore.

END OF VOL. I.

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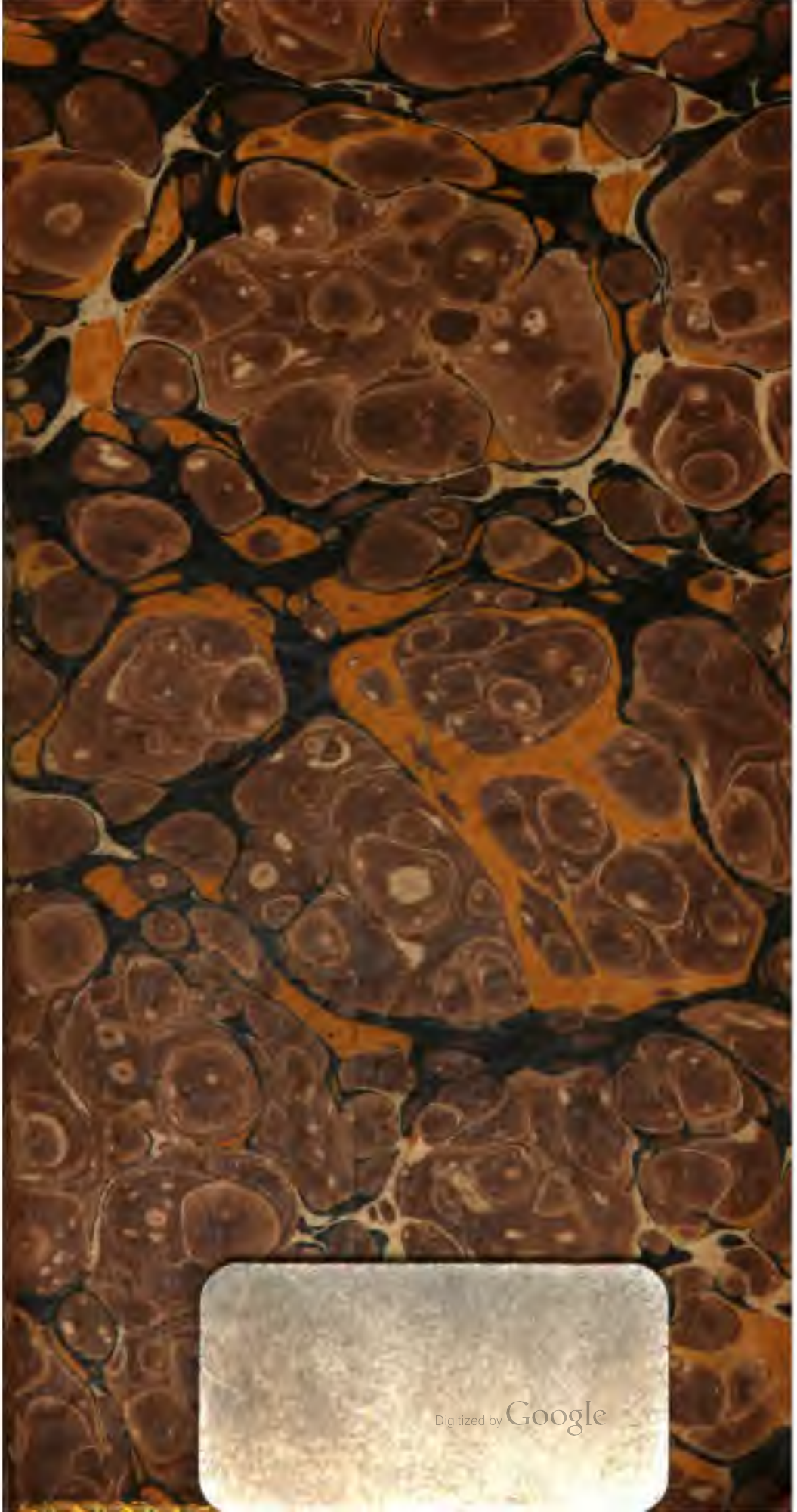
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